3dcreative

3dtotal.com

Issue 048 August 2009

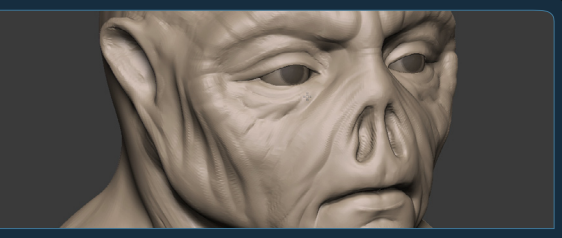
Interview
Christophe Desse

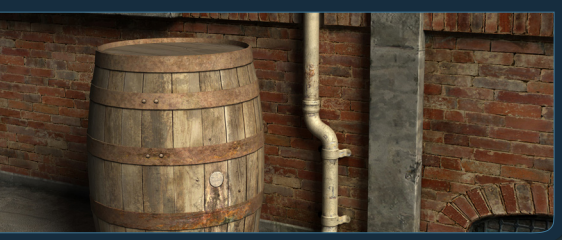
The Gallery
Pedro Conti, Andrei Cristea, Tomáš Müller & more!

Project Overview
'Mustang Shelby 67' by Marco Aurelio Magalhaes da Silva

SCULPT & TEXTURE LIKE A PRO!

MASTER YOUR SKILLS WITH OUR 4 TUTORIALS, CELEBRATING 4 YEARS OF 3DCREATIVE!





High-Poly Modeling in ZBrush

The second chapter in our **Next Gen Character Creation** series sees **Joseph Harford** start the sculpting of our high-poly mesh

Retouching Final Renders in PS

Chapter two of our **Photoshop for 3D** tutorial series with **Richard Tilbury** comes with free render passes for readers to follow along

ZBrush Sculpting & Texturing

Diego Maia tackles a rather fishy subject, producing this month's cover feature in part three of the **ZBrush Manimal Creation** series

Texturing Techniques in PS

Richard Tilbury shows us how to create custom textures for 3D scenes in our brand new three-part tutorial series, complete with lots of **FREE Total Textures** for all!

Editorial

August 2009 brings you the **48th issue of 3DCreative.** Which, if I'm not mistaken (and I've calculated this wrong before, so bear with me while I'll add this up…), is the mark of four whole years in production! Woo-hoo! It's been a great four years and we're happy to announce that we're going for five, so stick with us for more and more (and more) 3D into 2010!

So what's new this month? Well, you'll notice a slight change to 3DCreative in that we're going tutorial crazy from here on in and cutting back slightly on interviews and making of articles. We'll still have the gallery as normal, and the quality is certainly not going south, so we hope you'll like the changes we're making and enjoy all the tutorials we'll be covering now and into the future. As always, suggestions are very welcome – pop an email over to me at **lynette@3dtotal.com** if you'd like us to consider any topics for future issues!

New to the August issue is chapter one of a three-part series on Creating Custom Textures, by in-house 3DTotal artist, **Richard Tilbury.** And what's more, we're giving away another great selection of **Total Textures for FREE** in this issue to accompany the tutorial, so forward-click to **p.54** to get yourselves some free textures and learn some top tips from our very own texturing artist – who, by the way, worked previously as a texture artist for a U.K. games company before joining 3DTotal, and he sure knows his stuff!

3DCreative is all about tutorials now, so catch up with **Joseph Harford** on **p.82** as he takes our next-gen character low-poly base mesh, created in last month's instalment, into ZBrush for the first of two-parts sculpting, before moving onto the mapping and unwrapping in chapter four of the series. **James Busby** (LightWave), **Gavin Goulden** (Maya) and **John Hayes** (modo) will be back with us in part four of the Next-Gen Character Creation tutorial series when Joseph hands over the high poly ZBrush sculpt for the mapping/unwrapping fun to begin!

Also in its second chapter this month we have part two of Photoshop for 3D by **Richard Tilbury,** who takes us through retouching final renders, and our ZBrush Manimal Creation tutorial hits part three this month with Brazilian artist, **Diego Maia** returning to 3DCreative to take us through the production of an Aquatic-Man, on **p.38.** Diego also gives us some ZBrush rendering tips, the result of which is this month's front cover feature!

Our artist interview featuring in this month's magazine is with Californian-based artist, **Christophe Desse,** who teases us with sunny beach stories (whilst we sit here under what seem to be forever gray skies), and tells us a little about his move from film and advertising into real-time projects. You'll no doubt have seen one of Christophe's stylized cars featured in last month's gallery, so you can now take full advantage of our interview and delve straight into his portfolio on **p.6.**

Finally, our making of has been kindly contributed by **Marco Aurelio Magalhaes da Silva,** another talented Brazilian-based artist who talks us through his workflow when dealing with inorganic subjects, such as this beast of a car, the Mustang Shelby 67, **on p.66.** And before you leave us and wait patiently for next month's issue, be sure to check out our top picks in the gallery, with images by **Andrei Cristea, Stéphan Brisson,** and **Christian Rambow** just to name a few - **p.14** is the one want!

Enjoy! Ed.

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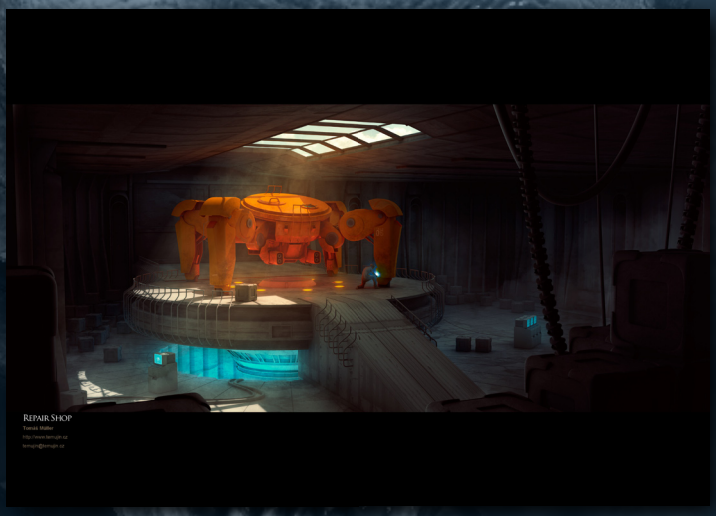
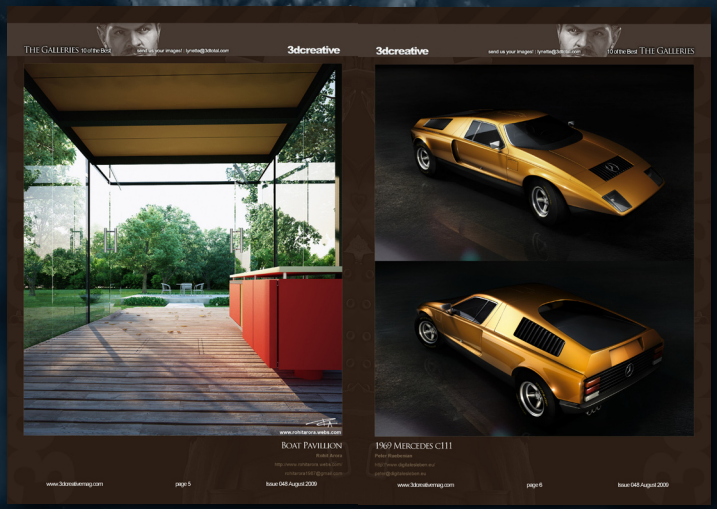
Free Stuff!

Wherever you see this symbol, click it to download resources, extras and even movies!

Get the most out of your Magazine!

If you're having problems viewing the double-page spreads that we feature in this magazine, follow this handy little guide on how to set up your PDF reader!





Setting up your PDF reader

For optimum viewing of the magazine, it is recommended that you have the latest Acrobat Reader installed. You can download it for free, here: DOWNLOAD!

To view the many double-page spreads featured in 3DCreative magazine, you can set the reader to display 'two-up', which will show double-page spreads as one large landscape image:

1. Open the magazine in Reader;
2. Go to the View menu, then Page Display;
3. Select Two-up Continuous, making sure that Show Cover Page is also selected.
That's it!

Contributing Artists

Every month many artists from around the world contribute to 3DCreative magazine. Here you can read all about them. If you would like to be a part of 3DCreative or 2DArtist magazines, please contact: lynette@3dtotal.com

Next Gen Character

This tutorial series provides a comprehensive guide through the process of creating a 3D character intended for use within a next-gen console environment. **Joseph Harford, Gavin Goulden, James Busby** and **John Hayes** tackle this new series providing versions for 3ds Max, LightWave, Maya, and modo

Richard Tilbury

Has had a passion for drawing since being a couple of feet tall. He studied fine art and was eventually led into the realm of computers several years ago. His brushes have slowly been dissolving in white spirit since the late 90s, and now his graphics tablet has become their successor. He still sketches regularly, balancing his time between 2D and 3D.

http:// www.richardtilburyart.com

Diego Maia

Freelance 3D modeler and concept designer from Brazil: he has worked for some of the biggest advertisement companies in Brazil, and has also been teaching drawing classes at Melies School for three years. He is currently working for the games company, Hoplon Infortainment (Brazil), as well as for The Aaron Sims Company (U.S.A.).

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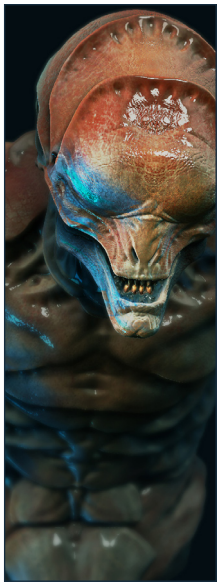

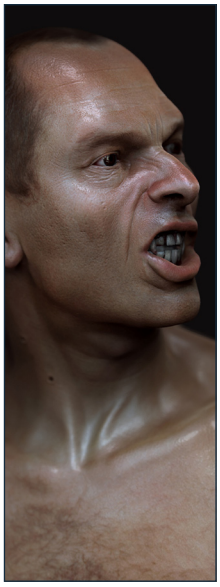

Joseph Harford

An avid artist since childhood. After freelancing in advertising and film he worked in the games industry at Crytek GMBH, the German games company behind *Far Cry* and *Crysis*. He later moved to Ubisoft as a senior character artist, and now works as a freelance artist whilst running ShineFX, a digital asset company.

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Marco Aurelio Magalhaes da Silva

From São Paulo, Brazil. Since 2003, after completing a course as a mechanical technician, he discovered CG. His dedication to CG led him to find courses where he could study further, and from there he worked professionally, developing his skills in modeling and rendering, working mostly with inorganic modeling.

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Would You Like To Contribute To 3DCreative Or 2DArtist Magazine?

We are always looking for tutorial artists, gallery submissions, potential interviewees, 'making of' writers, and more. For more information, please send a link to your work to: lynette@3dtotal.com

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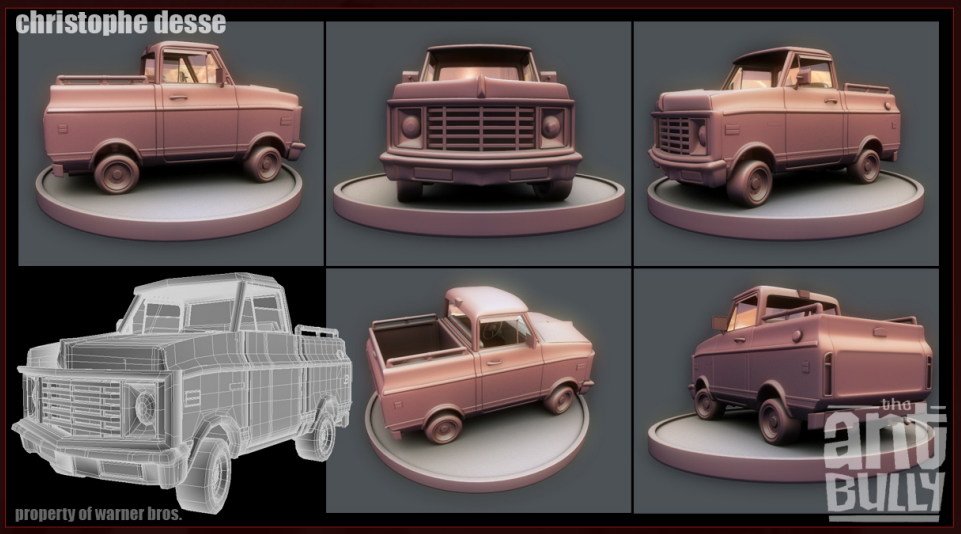
"I am sitting on the Zuma beach in Malibu typing this text on my laptop and I just saw two dolphins do some acrobatic jumps (most of the time, those lazy bastards just hang out in groups of five or so and swim slowly along the beach!)"

CHRISTOPHE DESSE

Having started out in film and advertising, Christophe Desse is now moving into real-time projects. We caught up with him recently to find out more about him as an artist and also how his experiences of working in Californian and European studios have differed. Plus he just won't let us forget how nice the weather is over there!

CHRISTOPHE DESSE



Hi Christophe! Now looking at the last update on your site (*cough* almost one year ago *cough*) it says you are working at Naughty Dog and judging by your email address you are still there! So what's this company like and how did you find yourself working in the games industry?

Hi Tom! Damn, I knew I'd forgotten something; it's true that I haven't updated the "news" section on my website for a very long time, but in my defense, I have added a couple of new pictures over the last 12 months. Quite a few in fact!

Actually I try to manage to get two or three portfolio pieces in every year. As for Naughty Dog, this company is awesome! We have a great mix of very talented people in the different disciplines required to produce a great game. Also there are not only great artists and games designers, but also a very impressive programming team who push the technology further every day. One of the main differences I have experienced at Naughty Dog, compared to other companies I have experienced in the past, is that the hierarchy is very flat and that we still maintained a beneficial "garage" feeling over the years. It's not too unusual to see an artist walk to a programmer and directly request a tool or a feature that he feels he needs. On the other hand, you could see the environment artist extrapolating on the main idea of the gameplay with the designer without him taking offense, as the main philosophy is teamwork.

Naughty Dog was not my first gig in the game industry; before that I worked for a couple of games companies in Europe, but my main area of occupation was mostly in 3D for video clips, advertising and movies. My last job before coming to Naughty Dog was as a set modeler on the feature film *The Ant Bully* from DNA productions in Irving, a small city close to Dallas Texas. As the movie wrapped up I unexpectedly became confronted with two options: going back to Europe, Paris or Berlin as I had ties in both cities, or taking an art test as a next gen environment artist at Naughty Dog, passing it, and moving down to work and live close to the beach in sunny Santa Monica.

It was an definitely a hellish couple of days as I was working 16 hours a day, crunching in the compositing department to finish the movie and doing the Naughty Dog art test in the little time left between shifts. Today when I look back at those insane couple of days, I do draw comfort from the fact that I did make the right choice.

"THE BIG DIFFERENCE FOR ME LIES IN THE FACT THAT HERE AT NAUGHTY DOG WE HAVE A REALLY FLAT HIERARCHY"

Retaining some of that "indy" or "garage" feel by working at Naughty Dog sounds pretty good! How else would you say the USA games industry varies from Europe? For example, here in the UK I have friends at studios who have to work considerable amounts of unpaid overtime, but they do get bonuses if the games sell well and also four weeks of annual leave per year.

From my experience, the big difference for me lies in the fact that here at Naughty Dog we have a really flat hierarchy and I can pop my head in any office in search of a solution to any production problem that might arise during my day to day work. This also includes the offices of our two co-presidents, as they are very deeply involved in the productions.

On the other hand, when I worked in Germany, for example, I would probably first have to go to my superior, who would go to his and so on and so on... With the result being that it would take a couple of days to get an answer. Here I can get an answer to a problem or submit an idea on the spot.

Another big difference is the fact that everyone at our studio takes a deep sense of ownership about our games and everyone pulls in the same direction to make sure that each game is the best that Naughty Dog has released to date. Until the next one, of course!

We all work very hard towards the end of a production cycle in order to deliver a great game, and we all put a "little" bit of extra time in here and there on a voluntary basis to make sure that we reach our self imposed goal. And yes we do get rewarded, not only with extra free vacation time, but also in the form of a nice bonus!

As for the difference of vacation time between Europe and the US; I for one definitely prefer to have only three weeks and live in a very sunny place like southern California, where every weekend feel like a vacation, as opposed to getting four weeks of vacation but having to live in a country where it rain a lot ..

No, no ... don't look at me like that - I didn't mean Great Britain ... how about the north of France? [Laughs].

Your gallery and showreel show you have fantastic all-round skills, but one thing that really blew me away is in your showreel when the vehicle textures are revealed. How did you achieve such amazing metal textures?

Thank you! All the vehicle pictures in my showreel and the newest one in the gallery have been rendered with mental ray, either in Softimage XSI or Maya. I don't really think that I have the key to any secret when it comes to metal, I just use some judiciously placed reflection cards, sometimes a HDRI map for the environment reflection, some gradients on the incidence angle for a nice Fresnel effect and some post processing.

"I've come to realize that most of the techniques are easily transposable from one application to the next. Same theory; different workflow"

Well they certainly make excellent portfolio pieces! And how do you learn techniques like this?

I guess that this is something that comes with experience; I started to use 3D software back in 1991 with good old 3D Studio. Since then, as I have had to learn lots of different pieces of 3D software, I've come to realize that most of the techniques are easily transposable from one application to the next. Same theory; different workflow.

But the software aspect aside, I think that it is very important to understand the real world physic that lie behind different materials and how they react to light.

Do you prefer organic modeling or hard surface? And why?

I don't really have a preference. I guess that the private work in my portfolio, and also the stuff I do for my own pleasure and the expansion of my skills, very much reflects this fact.

Granted I have been bitten by the muscle car bug since 2005 and count something like 13 cars in my gallery (without counting the other 6 or 7 that I never really finished) but I try to put one or two new characters in between each car.

In you last website update you mention you are working on a top secret project. As that was some time ago now - almost a year, a believe [Laughs] - can you tell us a little about this project now?

I swear I'm going to update the news section in the next few days [Laughs]! Top secret project? Oh yes, I was starting to go full steam on *Uncharted 2*. It was a very secret issue, as after the success of the first game we had to make sure the sequel was up to scratch to make the fans of the first game happy. It was imperative that we kept all the information under tight lips.

How about snowy locations, more drama, greatly improved gameplay and graphics and ... multiplayer! Check it out: http://ps3.ign.com/objects/142/14225971.html

Well it's been a few days since I emailed you that question Christophe, and guess what readers!? That's right, no update! [Laughs]. Don't worry Christophe, I think the world will survive this one! Seriously though, how much of an important part did your online portfolio play in helping you get work?

True, no real update lately on my portfolio, but in the meantime your readers could follow this link to my current work in progress: http://forums.3dtotal.com/showthread.php?t=67155

Even if we are working hard right now to make sure that *Uncharted 2* will be delivered on time, I still try to find a couple of hours a week to push this personal project forward.

Do you have big plans for the future, both from either a work or pleasure point of view?

The future? Well for now I can see myself staying where I am for the next couples of years, as we have some very interesting projects in the pipelines.

As for pleasure... I am currently sitting on the Zuma beach in Malibu typing this text on my laptop and I just saw two dolphins do some acrobatic jumps (most of the time, those lazy bastards just hang out in groups of five or so and swim slowly along the beach!) We came back yesterday from a short trip to the world's largest tree in the Sequoia National Park ...

Southern California is such a great region that I don't have to think too much about going somewhere else for pleasure!

And as for my very guilty pleasures, as long as I have my computer and one or two hours every evening in the week I am happy ... What? No! Not internet porn - I meant 3D for my personal projects of course [Laughs]!

Giant trees, lazy dolphins, late night surfing, geez, sounds like a fun, cool life you have there! I think I might come on vacation to escape the UK rain ... So, how is the weather right now?

Very pleasant; sunny and warm like most of the time in Santa Monica!

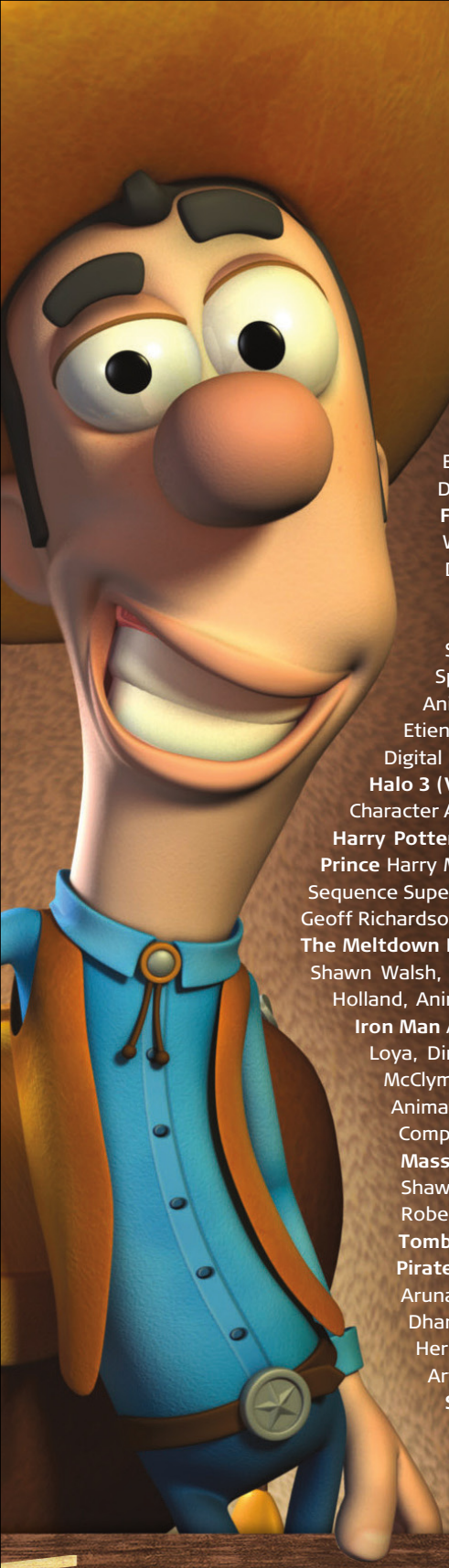
I knew you were gonna say that!

CHRISTOPHE DESSE

For more work by this artist please visit: http://www.xtrm3d.com/

Or contact them at: christophe.desse@xtrm3d.com

Interviewed by: Tom Greenway



Vancouver Film School alumni credits include **Across the Universe** Geeta Basantani, Digital Compositor **Alias** Scott Dewis, Visual Effects Artist **Babel** Luis Blackaller, Storyboard Artist | Lon Molnar, Visual Effects Supervisor **Battlestar Galactica** Daniel Osaki, Lead Modeler | Megan Majewski, 3D Animator | Alec McClymont, 3D Artist **Bioshock 2 (VG)** Jacob Palmer, Animator **Bolt** Lino Di Salvo, Supervising Animator/Voice of Vinnie **Charlotte's Web** Aruna Inversin, Digital Compositor | Adam Yaniv, Character Animator | Tony Etienne, Lead Lighter | Kristin Sedore, Lighter **The Chronicles of Narnia: Prince Caspian** Andreas Hikel, Pre-Visualization Artist | Christoph Schinko, Character Animator | Jami Gigot, Senior Layout Artist **Cloverfield** Nicholas Markel, Pre-Visualization Supervisor **Constantine** Aruna Inversin, Digital Compositor **The Dark Knight** Pietro Ponti, Lead CG Lighting Artist **Dead Like Me** Daniel Osaki, Visual Effects Artist | Alec McClymont, 3D Artist **Diablo III** Alvaro Buendia, Cinematic Artist | Steven Chen, Cinematic Artist **District 9** Neill Blomkamp, Director | Shawn Walsh, Visual Effects Executive Producer | Jelmer Boskma, Modeler Bernhard Kimbacher, Compositor | Julianna Kolakis, Creature Texture Painter | Adam Marisett, Visual Effects Artist | James McPhail, Visual Effects Technical Director | Dominic Cheung, Lighting Technical Director | Grant Wilson, Animator | Joey Wilson, Modeler **Family Guy** Michael Loya, Storyboard Artist **Fantastic Four: Rise of the Silver Surfer** Arun Ram-Mohan, Lighting Technical Director | Shawn Walsh, Visual Effects Executive Producer | Jessica Alcorn, Compositor **Gears of War (VG)** Scott Dossett, Animator **G.I. Joe: The Rise of Cobra** Allen Tracy, Visual Effects Editorial Supervisor | Aruna Inversin, Digital Compositor Jeremy Stewart, Senior Animator | Jelmer Boskma, Modeler **The Godfather (VG)** Kirk Chantraine, Motion Capture Specialist **The Golden Compass** Adam Yaniv, Animator | Chad Moffitt, Animator | Thom Roberts, Animator | Ben Sanders, Animator | Andrew Lawson, Animator | Matthias Lowry, Visual Effects | Tony Etienne, Look Development | JustinHammond,Lighter | Pearl Hsu, Effects Technical Director | Aruna Inversin, Digital Compositor | Fion Mok, Matchmove Artist **Hairspray** Lon Molnar, Visual Effects Production Executive **Halo 3 (VG)** Bartek Kujbida, Character Animator **Happy Feet** Ben Sanders, Character Animator | Thom Roberts, Character Animator **Harry Potter and the Prisoner of Azkaban** Shawn Walsh, Color & Lighting Technical Director **Harry Potter and the Order of the Phoenix** Pietro Ponti, Technical Director **Harry Potter and the Half-Blood Prince** Harry Mukhopadhyay, Lead Effects Technical Director **Hellboy II: The Golden Army** Christoph Ammann, 3D Sequence Supervisor **Horton Hears a Who** Arun Ram-Mohan, Lighting Technical Director | Brent Wong, Modeler **Hulk** Geoff Richardson, Visual Effects Editor **I, Robot** Daniel Osaki, CGI Modeler | Megan Majewski, Pre-Visualization **Ice Age: The Meltdown** Ben Sanders, Character Animator | Arun Ram-Mohan, Lighting Technical Director **The Incredible Hulk** Shawn Walsh, Visual Effects Executive Producer | Tony Etienne, Look Development Lead **The Incredibles** Daniel Holland, Animator **Indiana Jones and the Kingdom of the Crystal Skull** Henri Tan, Creature Technical Director **Iron Man** Adam Marisett, Visual Effects Artist **King Kong** Chad Moffitt, Senior Animator **King of the Hill** Michael Loya, Director **Kingdom Hospital** Daniel Osaki, Visual Effects Artist | Megan Majewski, 3D Animator | Alec McClymont, 3D Artist **Kingdom of Heaven** Shawn Walsh, Digital Compositor **Left 4 Dead (VG)** Nick Maggiore, Animator **Letters from Iwo Jima** Aruna Inversin, Digital Compositor **Live Free or Die Hard** Jessica Alcorn, Compositor **Lord of the Rings Trilogy** Chad Moffitt, Senior Animator **Lost** Scott Dewis, Visual Effects Artist **Mass Effect (VG)** Sung-Hun (Ryan) Lim, 3D Modeler **Matrix: Revolutions** Aruna Inversin, Digital Compositor Shawn Walsh, Color & Lighting Technical Director **Master & Commander: The Far Side of the World** Robert Bourgeault, CG Artist **Metal Gear Solid 4 (VG)** Josh Herrig, Artist | Yuta Shimizu, Artist **The Mummy: Tomb of the Dragon Emperor** Aruna Inversin, Digital Compositor **Persepolis** Marianne Lebel, Animator **Pirates of the Caribbean: At World's End** Ben Sanders, Character Animator | Allen Holbrook, Animator Aruna Inversin, Digital Compositor **The Pirates Who Don't Do Anything: A VeggieTales Movie** Mike Dharney, Animation Supervisor **Reign of Fire** Lino DiSalvo, Animator **Resident Evil: Extinction** Joshua Herrig, Visual Effects Artist **Robots** Arun Ram-Mohan, Additional Lighting **Rome** Teh-Wei Yeh, Matchmove Artist **Scarface (VG)** Maya Zuckerman, Mocap 3D Generalist **Shrek the Third** Rani Naamani, Animator **Shrek the Third (VG)** Samuel Tung, Technical Artist **Sin City** Michael Cozens, Lead Animator **Smallville** Geeta Basantani, Lead Compositor **Star Trek** Aruna Inversin, Digital Compositor | Tom Piedmont, Digital Plate Restoration **Star Wars Episode III: Revenge of the Sith** Andrew Doucette, Character Animator | Nicholas Markel, Pre-Visualization **Star Wars: Knights of the Old Republic (VG)** Arun Ram-Mohan, 3D Artist | Jessica Mih, Level Artist **Stargate: Atlantis** Daniel Osaki, 3D Animator

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VFS student work by Thiago Martins

THE GALLERY

This Month we Feature:

Gene Erh The

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Christian Rambow

Andrei Cristea

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Sreenath

Stéphan Brisson | Elise Frappier | Valerie Villeneuve.

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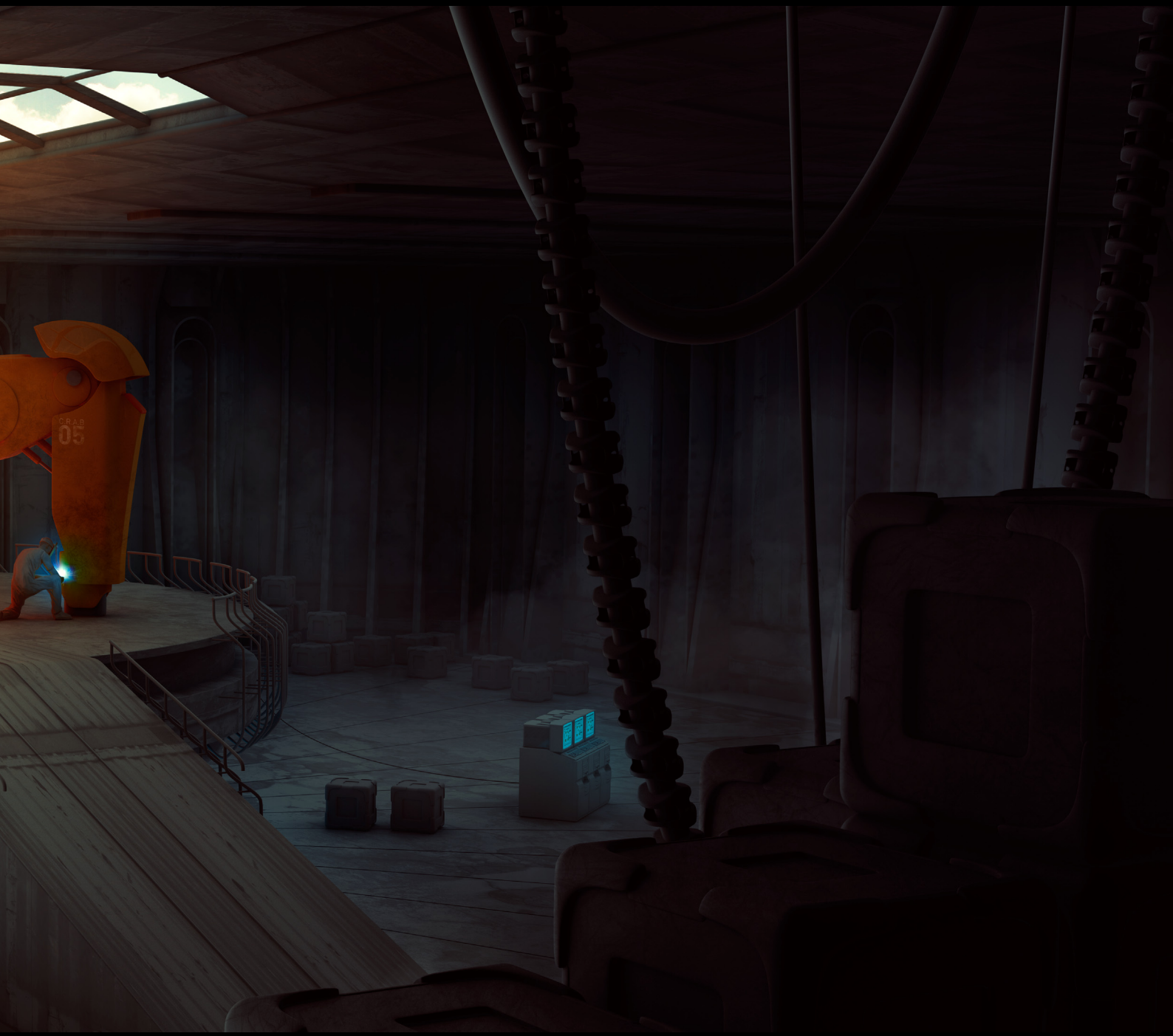
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Brown

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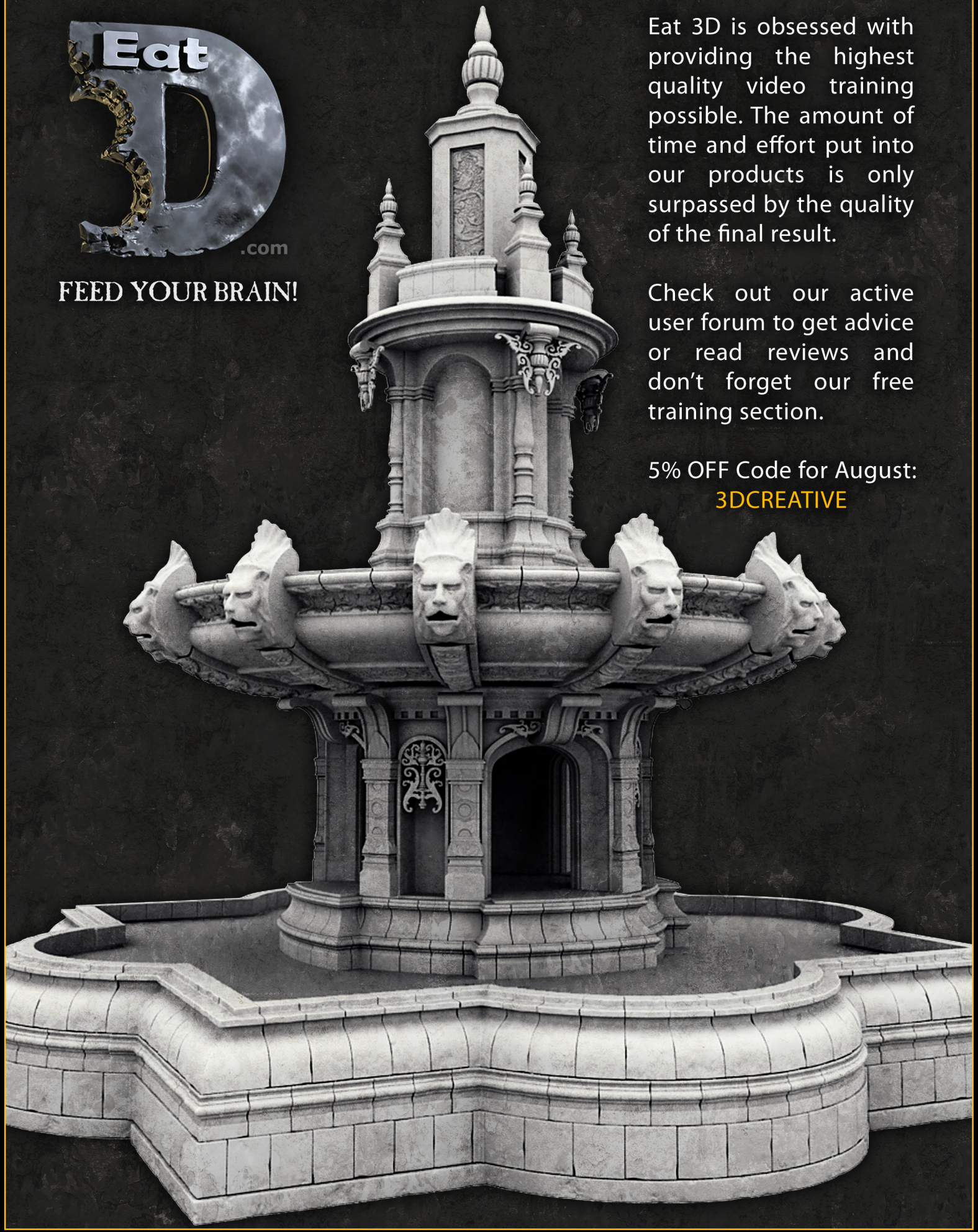

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Flip to Page 082 for the second part of our new Mega Tutorial Series

NEXT GEN CHARACTER CREATION SERIES

This series of tutorials provides a comprehensive guide through the process of creating a 3D character intended for use within a next gen console environment. As such, the design of the model will be tailored towards the eventual aim of functioning within a game engine and viewed in real-time. The series will cover all of the key stages of the 3D pipeline from sculpting the initial mesh in ZBrush and optimizing it in the principal 3D packages, through to texturing and applying next gen shaders. The inclusion of ZBrush tutorials will address the methods of sculpting both a low-poly mesh as well as a highly detailed version used to generate a normal map, and accompany the remaining software specific chapters that will detail topics that cover mapping, materials, lighting and rendering.

Follow

The second chapter of our new tutorial series which is split into two parts (part 2 will continue next month in Chapter 3). These two parts are ZBrush specific and cover the methods used to sculpt a detailed and high-poly mesh from the low-poly version. The value of subdivision alongside the key tools and brushes used in the process will form an integral part of the tutorial. It begins by importing the optimised mesh back into ZBrush in readiness for a methodical approach to refining each of the limbs and body parts.

So if your interested in seeing the second part of this amazing new series, please flip to the back of this magazine and enjoy.

ZBrush 3ds max lightwave Maya modo


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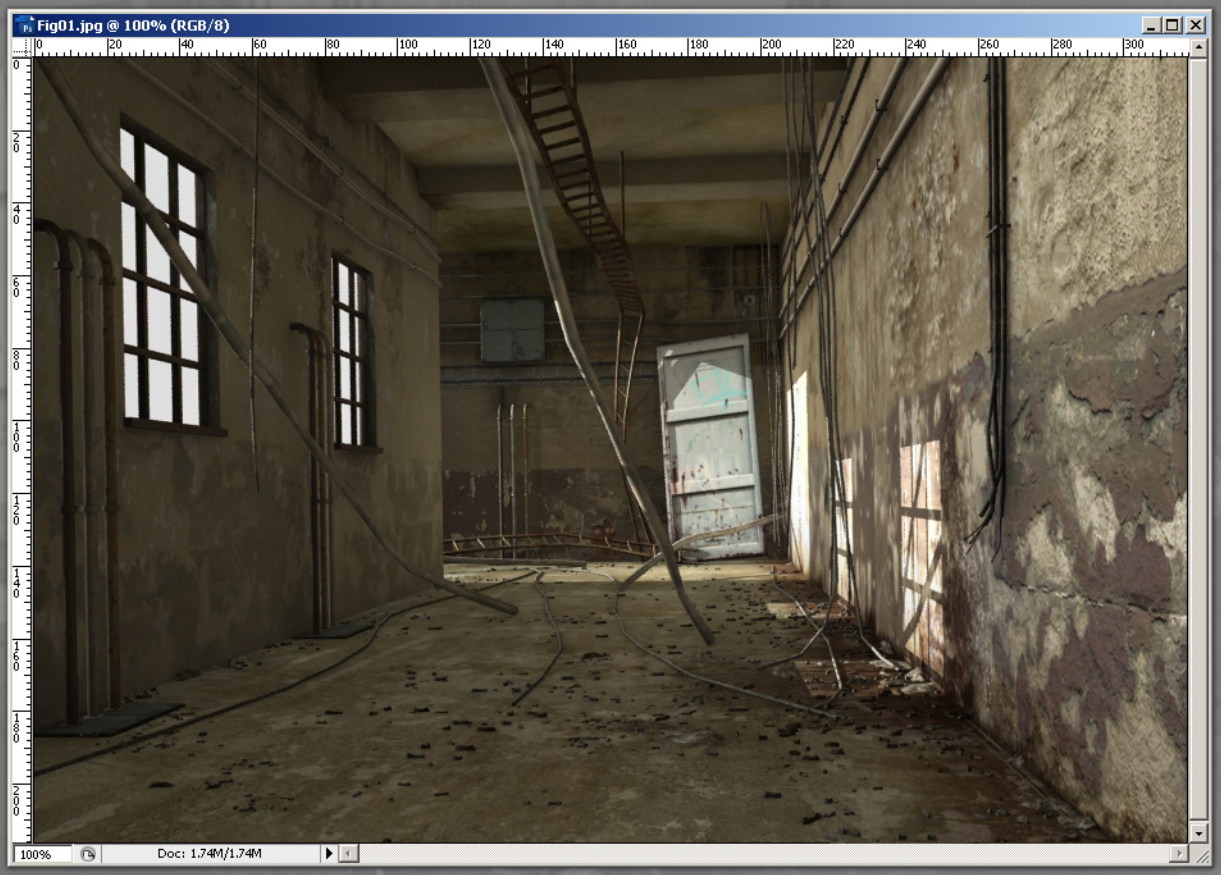
Photoshop for 3D

This series of tutorials aims to show the value of post-production and more specifically the ways in which Photoshop can be used to aid the 3D pipeline. Over the course of six chapters we shall focus on the various tools and techniques on offer in Photoshop that are frequently used to improve 3D renders. Compositing passes, adding particle effects, improving lighting and making general colour adjustments are a few of the topics covered, as well as ways to create backgrounds that both complement and enhance characters. The methods presented within this series can provide an efficient alternative to lengthy render tests and experimenting with numerous settings, and will enable artists to seamlessly blend 2D techniques into a 3D process, resulting in a versatile and streamlined workflow.



Chapter 1
Render Passes

Chapter 2: Retouching Final Renders

This chapter takes off where the previous one ended and assumes that we have now composited our passes into a single render. It focuses on remedying general problems concerning issues such as tiling textures along with effective ways of applying dirt maps to help integrate surfaces by way of the Vanishing Point filter. The other key tools that are explained are the Clone Stamp and Healing Brush which are used to retouch and tidy up any unsatisfactory areas

Chapter 3
Lighting & Special Effects

Chapter 4
Curves, Levels, Colour Balance & Layer Styles

Chapter 5
Layer Masks & Adjustment Layers

Chapter 6
Creating Backgrounds

Chapter 2: Retouching Final Renders

Created In: Photoshop

Introduction

In the previous chapter we looked at how various render passes can be composited in Photoshop to create a still image that integrates different components in a scene. We saw how, by rendering these elements separately, it enabled more control and flexibility when it came to producing a final image.

Photoshop is a powerful tool when used in conjunction with 3D renders, and affords the artist the chance to experiment with aspects such as lighting, as well as some of the surface qualities of objects in the scene. It can be a lengthy and time consuming operation to get a final render exactly right from within the 3D package itself, whereas post-production often proves to be a quicker and simpler solution in many cases.

In this chapter we will be carrying on as it were from Chapter 1, and assume that we have composited all our render passes together. Even when separate passes are rendered out it is often the case that many fall short of exactly what the author would like, either due to time constraints or not being able to set the scene

Fig.02


Fig.01

up perfectly. Sometimes it is not possible to unwrap every piece of geometry and hand paint each texture map to show the appropriate wear and tear caused by either human contact or through more natural means. Adding dirt and grime to specific areas, along with the many subtle details that make a scene tangible, can take many hours to get right through texture mapping and test renders. One of the other problems facing the 3D artist is finding the right photos at the right resolution, and often the solution comes at a price – namely, tiling. This is an effective alternative, but it does have its drawbacks in the form of symmetry, which is a rare thing in the world.

All of these issues can be overcome in 3D, but as we are about to see, a 2D approach in Photoshop can prove just as worthy – and far more economical with regards to time.

Fig.01 shows our final render which is made up of the Diffuse or Color pass, an Ambient Occlusion pass and a Specular pass. All of these have been composited in Photoshop to create the still we can see here.

The scene at first inspection doesn't look too bad – and so it shouldn't given that it has been texture mapped and carefully lit. The right hand side wall displays a richer detail as this is nearest the camera, and as a consequence more effort has been afforded to this portion of the scene. The staining along the floor where it meets the wall adds interest and helps integrate the two planes, but the opposite side looks somewhat inconsistent.

It is true that the same attention could have been equally applied to all areas of the scene, but assuming that time is limited then less conspicuous sections will be granted swifter treatment.

The key problem areas are highlighted as follows, and indicated on the render accordingly (**Fig.02**):

1. There is evidence of tiling along this lower section of the wall
2. Although the AO pass helps bind the edge where the wall meets the floor, the lack of any dirt makes this area less convincing compared to the opposite side
3. This junction between the wall and ceiling also suffers a similar problem but also shows the edge of a texture overlay running vertically

The first thing to correct will be the tiling, which can be done by using the Clone Stamp Tool. Select a textured brush along the lines of one shown in **Fig.03**, and then hold down the Alt key and left-click on a section you wish to clone, evident by a white crosshair.

Now move the cursor to the area you wish to modify (see the red area in **Fig.04**), release the Alt key, and left-click to begin painting. Alternatively, you can use a graphics tablet instead of a mouse. You can very quickly remove any tiling this way, and you will notice that I have also modified the seam directly above this section.

Now we will add some dirt to the left side of the corridor, and to do this we can take advantage

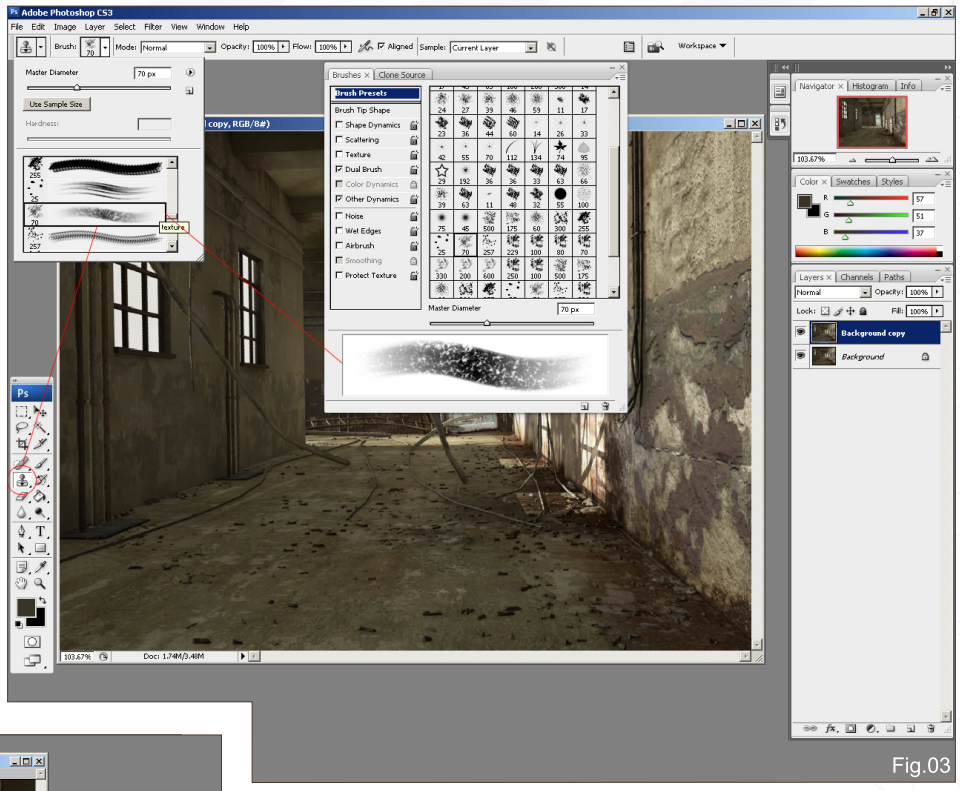


Fig.03

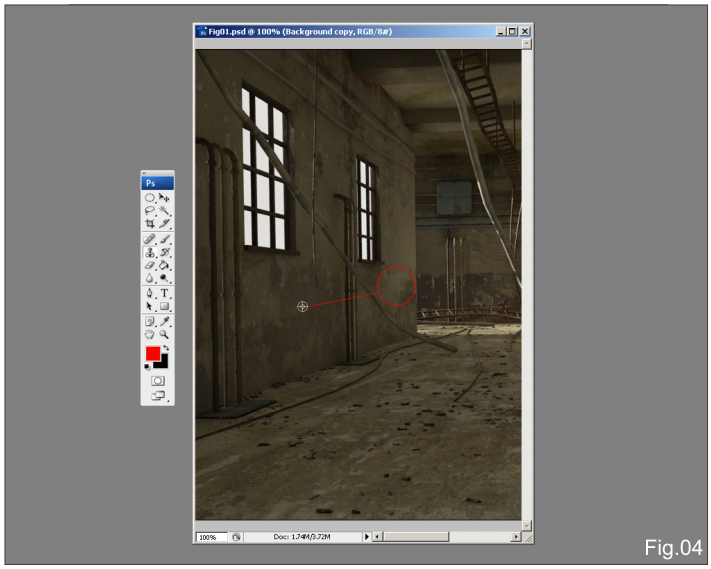


Fig.04

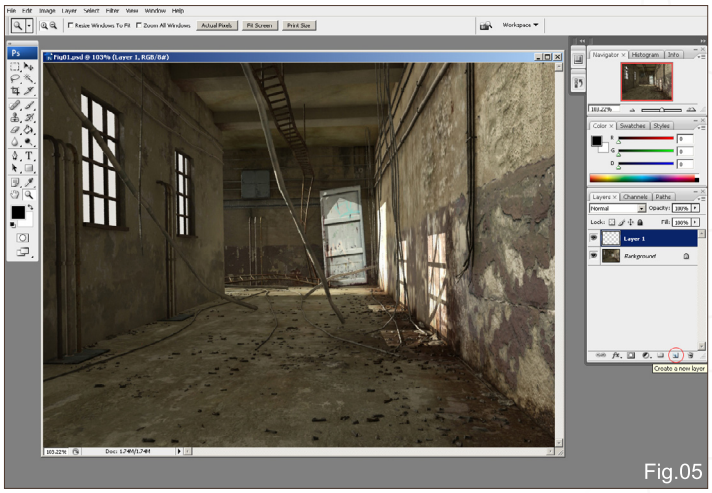


Fig.05

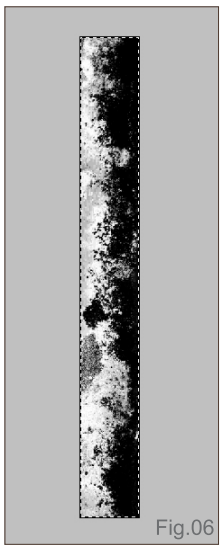


Fig.06

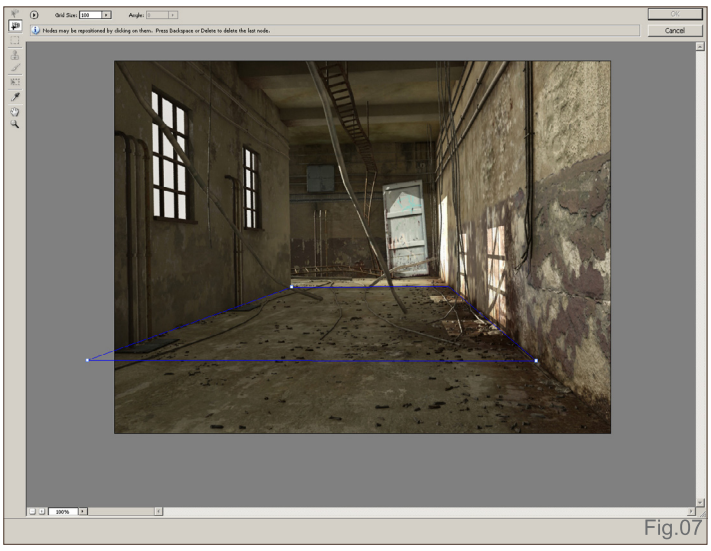


Fig.07

of the Vanishing Point Filter. Start by adding a new layer: Layer > New > Layer, or by clicking on the small icon at base of layer palette next to the trashcan (**Fig.05**).

Next choose a suitable dirt map (**Fig.06**), and then select the whole canvas (Ctrl + A) and copy it (Ctrl + C). If the map is horizontal, rotate it by 90 degrees, as a vertical map will be easier to manipulate in this instance.

Now, with the new layer selected in the scene file, go to Filter > Vanishing point. This will open a new window similar to that shown in **Fig.07**.

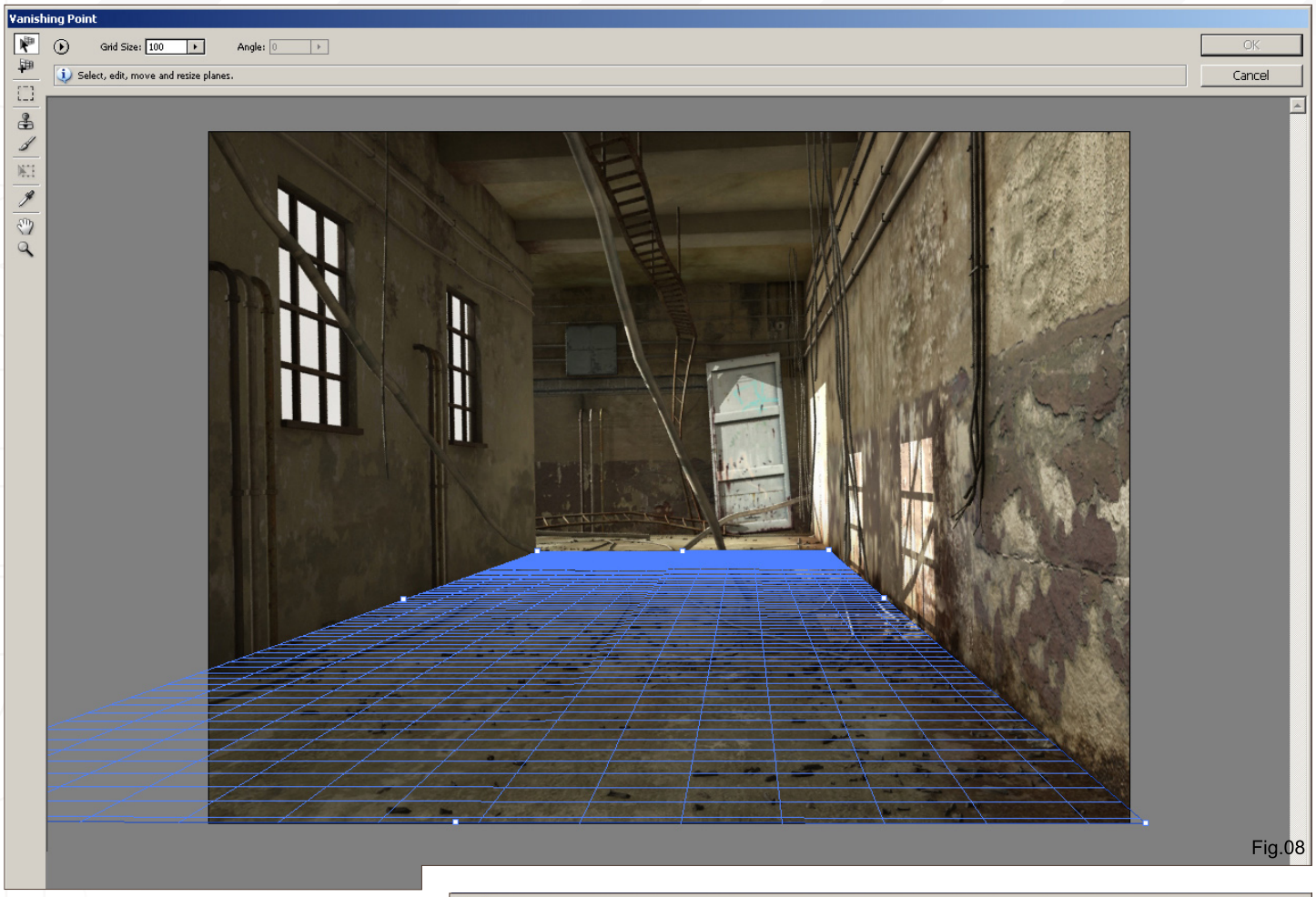


Fig.08

The Create Plane tool will automatically be selected, so simply drag and click to create a grid that matches the perspective of your render. Once you click to establish the fourth corner, a grid will appear and you will be in Edit mode (**Fig.08**).


Fig.10

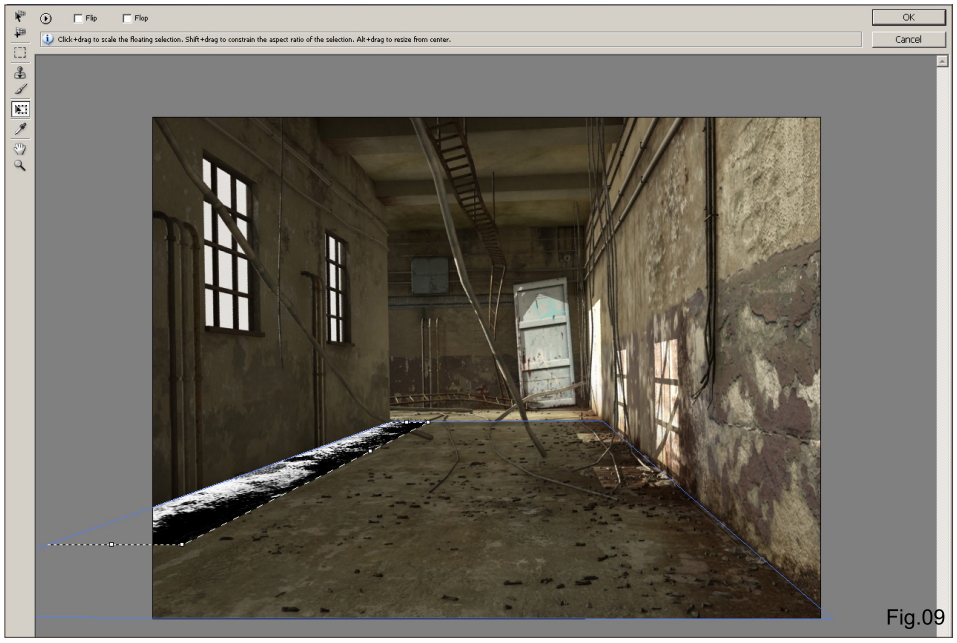


Fig.09

Use the control points to accurately position the grid and, when satisfied, paste in your dirt map (Ctrl + V). Left-click on the map and drag it over the grid where it will automatically align with the perspective, and use the Transform tool to scale and position it more accurately (**Fig.09**).

Now click OK, and you will be taken back to the scene render – except this time with a new dirt map overlaid in a new layer (**Fig.10**).

Now hold down Ctrl + I to invert the map (black becomes white, and vice versa) and then set the

blending mode of the layer to Multiply at around 45% Opacity (**Fig.11**).

Because the dirt map was a grayscale map it should have a little color to match the other grime in the scene, so go to Image > Adjustments > Color Balance and add some red and yellow.

All that is left to do now is to use the Eraser Tool to delete sections that wrongly overlap, such as the panels below the pipes and the end of this metal pole in **Fig.12**. A tiny amount of blurring (e.g. 0.3) may help blend it in further.

This same procedure can be repeated for the dirt map on the wall and the ceiling by adding a new grid in the Vanishing Point window as before. Because the wall is adjacent to the floor, a grid can be pulled upwards from the existing one by holding down Ctrl and dragging one of the points in the relevant direction.

One final area which could benefit from a little more detail is the foreground section of the floor nearest the camera. Instead of adding more geometric particles, or perhaps a normal map, etc., it is possible to use the Healing Brush Tool highlighted in **Fig.13**.

This is used in exactly the same way as the Clone Stamp Tool by holding down the Alt key and left-clicking on an area you wish to duplicate. Using this tool on the wall section

Fig.12

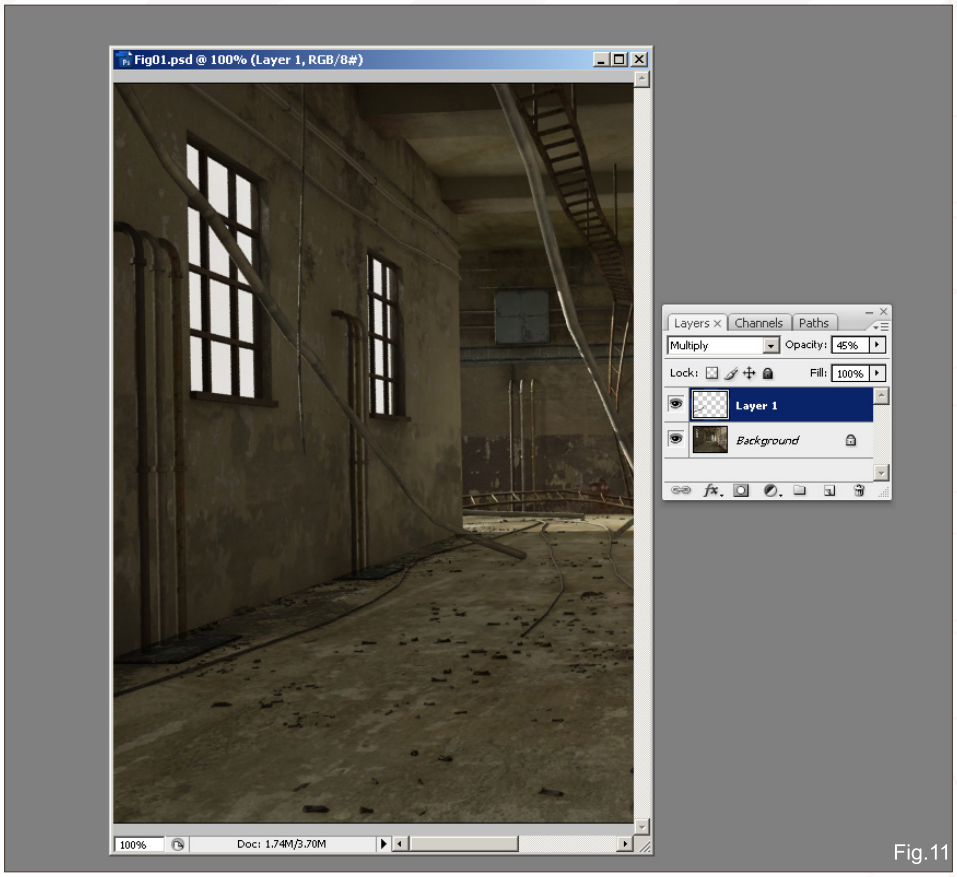


Fig.11

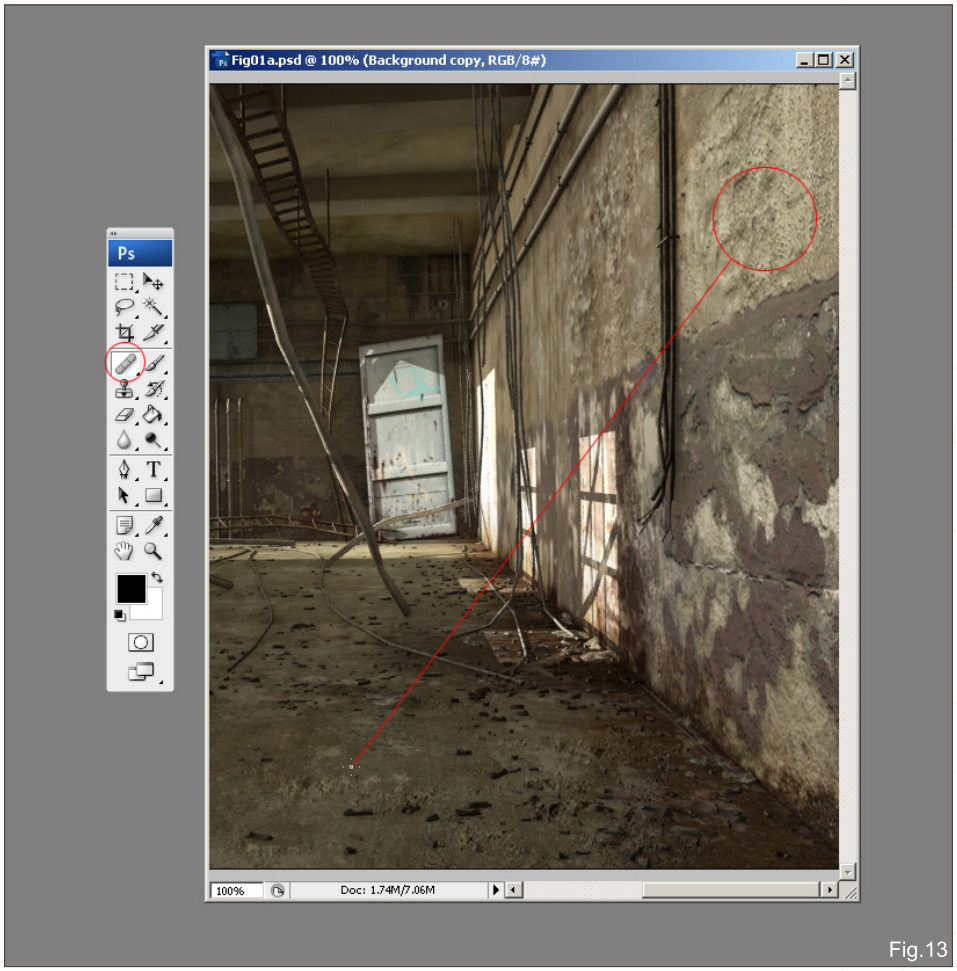


Fig.13

highlighted in red means we can then transfer the rough appearance of the wall to the floor section, whilst maintaining the local color values.

Fig.14 shows the original untouched Color render, and **Fig.15** is the retouched version, both of which exclude the AO and Specular passes.

The Ambient Occlusion pass will certainly help bind the space, but you can see how these minor tweaks help improve the render and can be achieved quickly.

Conclusion

If a world existed without time limits and deadlines then we could all spend a great amount of time perfecting things, even though it may drive us to madness!

However, this is not the case, and invariably concessions have to be made and corners cut, but hopefully this tutorial has shown how post-production can be an effective remedy to more intensive 3D procedures.

It may appear as though the alterations make little impact upon the 3D render, but the sum of all these small changes contribute towards a more convincing and plausible outcome.


Fig.14

In the next chapter we will look at adding particle and lighting effects, and generally enhancing the mood of the render.

Richard Tilbury

For more from this artist visit
http://www.richardtilburyart.com/
or contact
rich@3dtotal.com


Fig.15

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"I decide to add some skin plates and scales to the character to give him a fishy look, also pulling the jaw out quite a lot – as you can see in some deep sea fish creatures – all the while checking the silhouette is working and the design is strong."

June 2009
Part 1: Bird-Man

July 2009
Part 2: Mammal-Man

August 2009
Part 3: Aquatic-Man

September 2009
Part 4: Amphibian-Man

October 2009
Part 5: Insect-Man

November 2009
Part 6: Reptilian-Man

ZBrush Manimal

creation series: part 3 - aquatic-man

Welcome to the new ZBrush Manimal Creation tutorial series. Each month we'll see a new artist tackle one of our topics, who will take us step-by-step through the transformation of a generic human head and torso base mesh into a hideous amalgamation of man/creature of 3DCreative's choice! We thought that topics such as a bird, aquatic, and insect would be fantastic for detailed sculpting work – and on top of all this, the artists will texture their models, too, bringing these monstrosities to life. So stay-tuned over the next six months to see what they come up with, and to learn a thing or two about detailed sculpting and texturing in ZBrush.

The second part of this tutorial series will see **Diego Maia** cover the development of a **Aquatic-Man**. Enjoy!

Download your free base mesh here!

AQUATIC-MAN

Software Used: ZBrush

INTRODUCTION

I was asked to create a character for this tutorial article under the heading of "Aquatic-Man", to show how ZBrush can be utilized to sculpt and texture such an extraordinary creature, thought up from the depths of my imagination by crossing human elements with those of aquatic beings. Here's how we'll go about creating such an amalgamation in this second part of the Manimal tutorial series.

BASE MESH

I decide to work straight from the offset by sculpting directly in ZBrush from the base mesh provided (**Fig.01 – 02** – you can download the same base mesh with this tutorial – look out for the Free Resources logo), without creating a concept before starting. I find ZBrush is a pretty cool tool that enables you to figure out good designs directly in 3D, without the need for preliminary drawings on every occasion.

SCULPTING IN ZBRUSH

So to start, I choose a material for the base mesh that I think most suitable and that will help in this initial sculpting stage. You can try different materials by clicking on the sphere on the left-hand side of the screen. Using Transpose I manipulate the character into a pose closer to what I imagine the final character will be in – something like that of a creature moving through the current of water (**Fig.03 – 05**). To use Transpose, you'll see at the top of the screen the Move, Scale and Rotate buttons – in this case I'm using the Rotate function. To make a mask in order to move individual elements of the model, you simply hold down Ctrl and drag your cursor over the model. You then simply need to draw a line from the rotation point to the point that you need in order to successfully move your model.

I'm trying out this pose to illustrate a swimming creature. Unfortunately the base mesh has not been provided with any legs so I can't use the bottom part of his body to work into the concept, so instead I'm using his

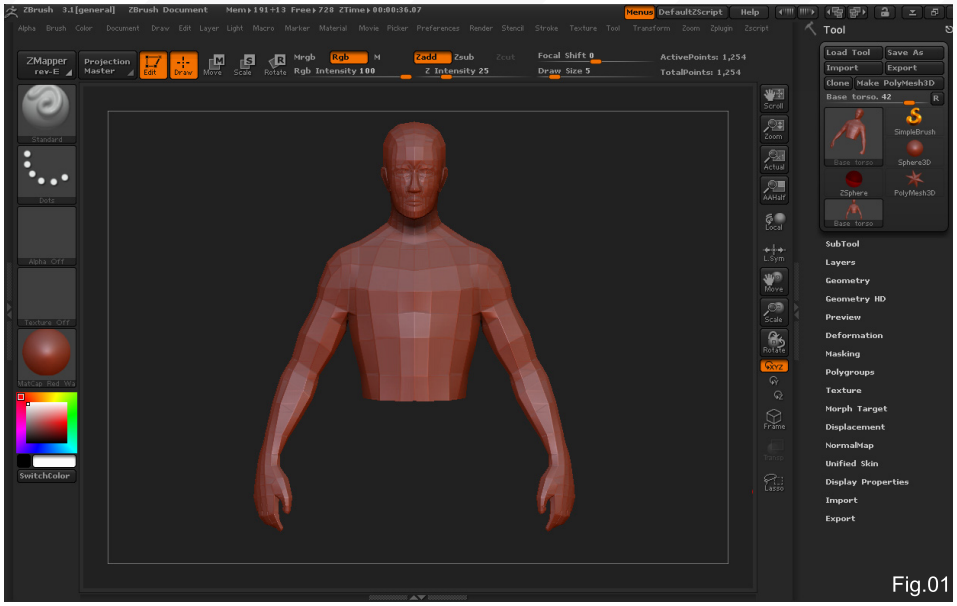
Fig.01

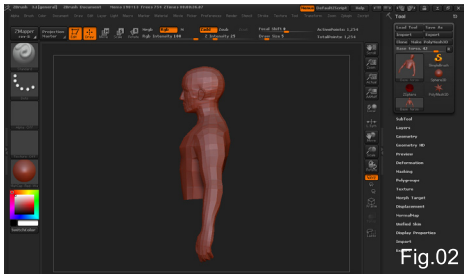
Fig.02

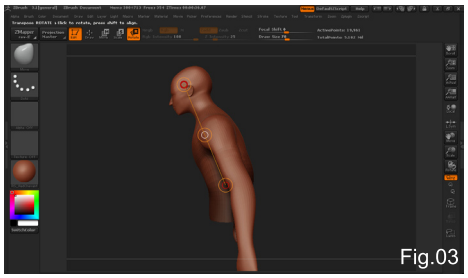
Fig.03

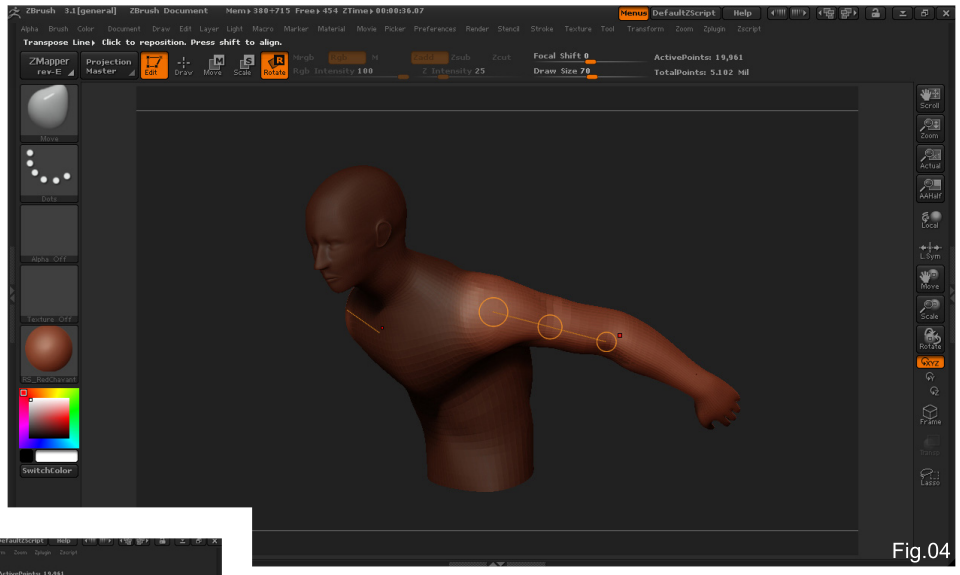
Fig.04

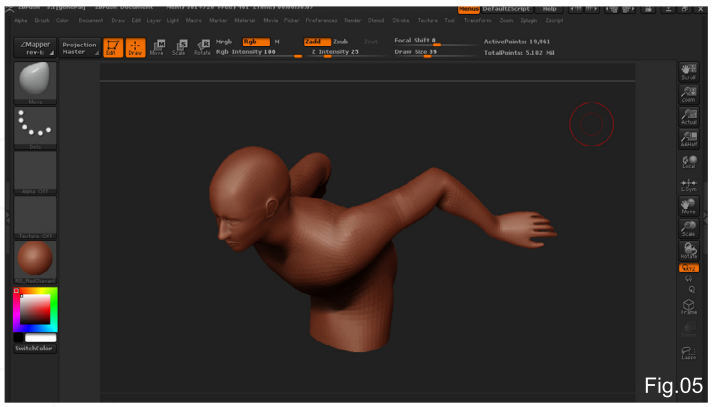
Fig.05

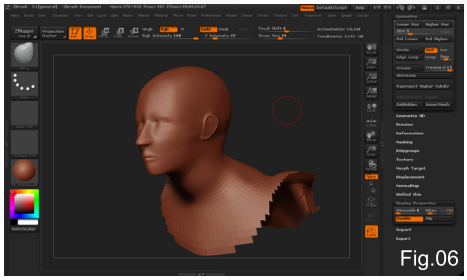
Fig.06

arms pulled backwards to give a sense of this creature gliding through water. I'm using fresh water fish as my references, rather than salt water fish, because I want to work with aquatic references with fewer colors going on – I think sea creatures could be too colored for this character.

Before I start the sculpting work, I like to subdivide my base mesh as much as possible, but I'll reduce all those subdivisions again before starting the modeling. I do this because sometimes you'll subdivide the mesh with some hidden parts, and only unhidden parts will be subdivided. When using Transpose I like to work in the second or third level of subdivision. I do this because the mask function doesn't work very well on the first level of subdivision, and it's much harder to get smooth results on higher levels. So from experience I recommend using levels two or three at this stage.

I don't have too much of an idea about how my character's head will look at this stage, so I'm simply playing around with form and shape to find a good design for his face and head (**Fig.06 – 07**). I'm using the Standard brush and working in the third level of subdivision here.

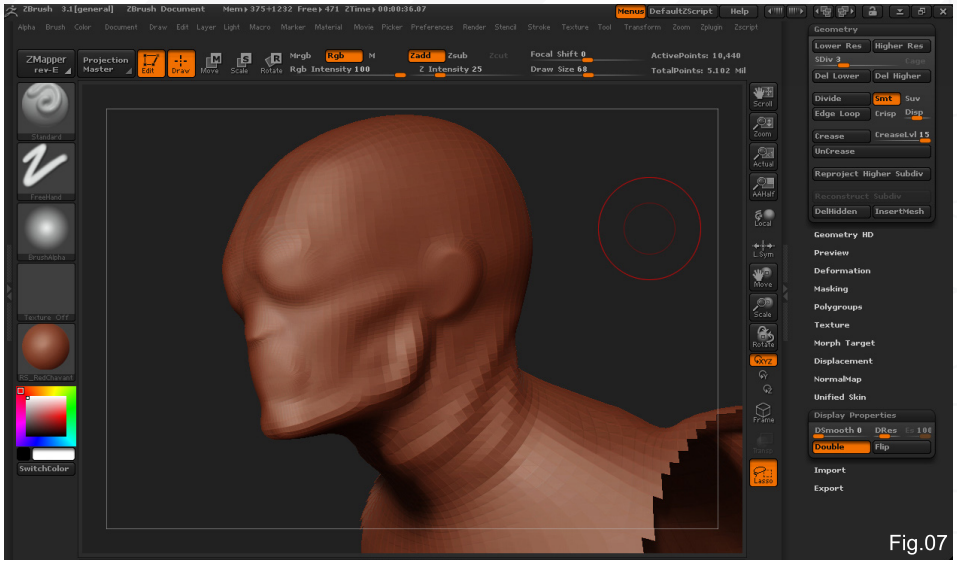
Fig.07

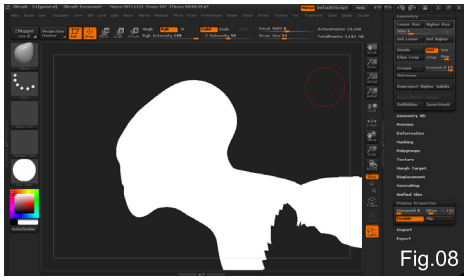
Fig.08

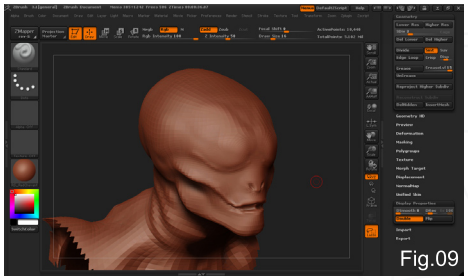
Fig.09

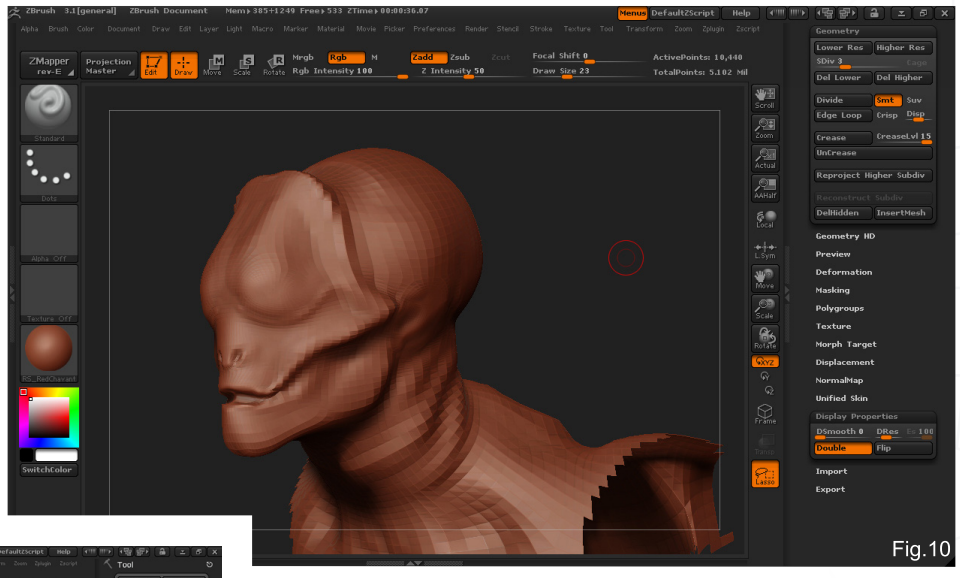
Fig.10

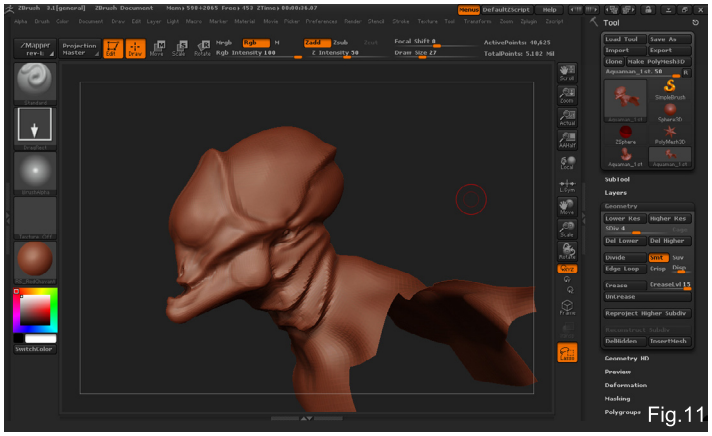
Fig.11

As I work I keep checking the silhouette as often as I can, as it helps in finding a good design. To create a silhouette of your model, simply find the Flat Color material on the Material palette, again by clicking on the sphere on the left-hand side of the screen. With the head design established first, it will be much easier to create the body afterwards.

I decide to add some skin plates and scales to the character to give him a fishy look, also pulling the jaw out quite a lot – as you can see in some deep sea fish creatures – all the while checking the silhouette is working and the design is strong (**Fig.08 – 11**). I'm still working in the third level of

subdivision here, using the Standard and Move brushes. I'll sometimes also load in Alpha 39 into my Alpha palette in order to achieve some stronger lines.

Because I'm still unsure about how the body will be, in terms of its design, I decide to block in some simply human anatomy first to give me a starting ground from which to build upon, isolating parts individually and working on them separately (**Fig.12 – 16**). I'm now working in the fourth level of subdivision, still using the Standard Brush to find the shapes. To hide parts of your model you simply need to press and hold Ctrl and Shift on your keyboard, and draw a green mask over the model. If you need a different type of mask you can always hit Lasso on the right-hand side of the screen, or you can use the shortcut, Ctrl + Shift + M.

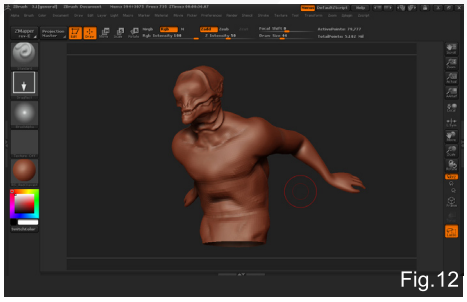
Fig.12

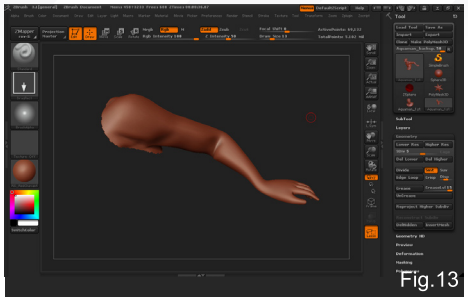
Fig.13

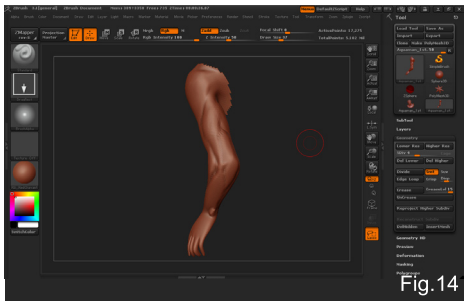
Fig.14

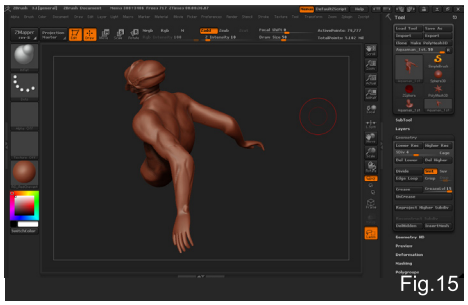
Fig.15

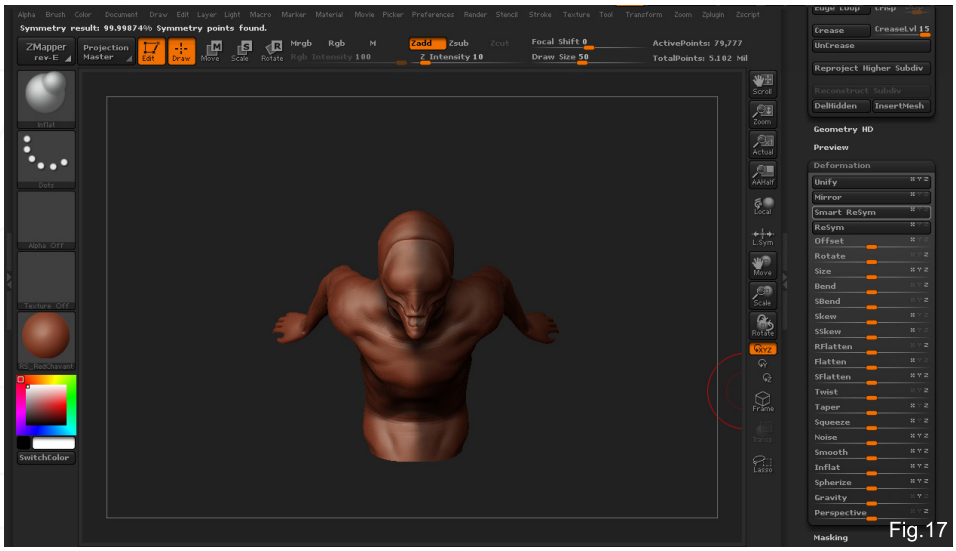

Fig.17

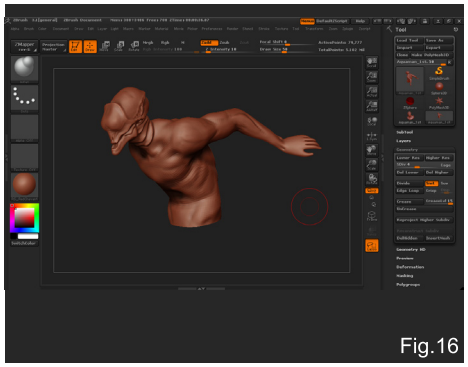
Fig.16

The beauty at this stage is that I can work on just one side of the body, and then, using the SmartResym tool, simply copy the work done to the other side of the model (**Fig.17**). To do this, you simply create a mask – again by pressing and holding Ctrl and clicking and dragging your left mouse button – where you've being working, leaving the untouched part of the model outside of the masked zone. Go to Tool > Deformation > SmartResym, and you will see work copied across to the unmasked area.

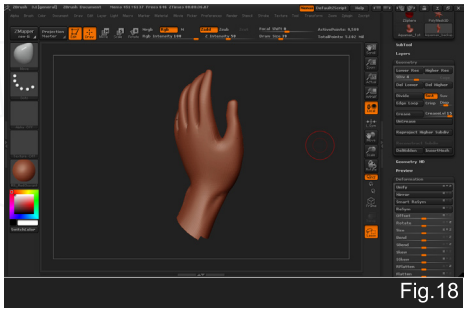
Fig.18

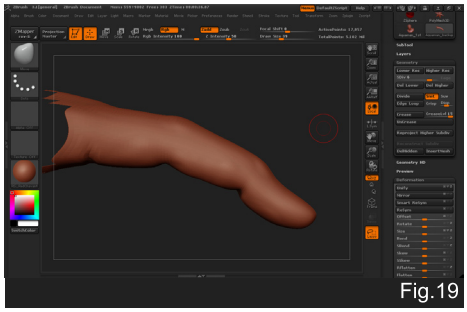
Fig.19

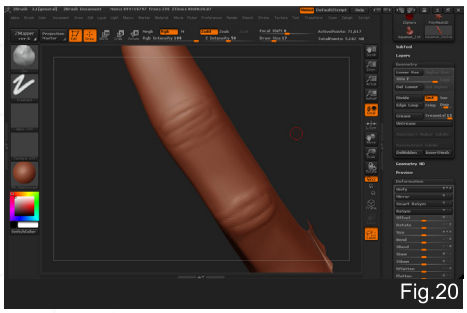
Fig.20

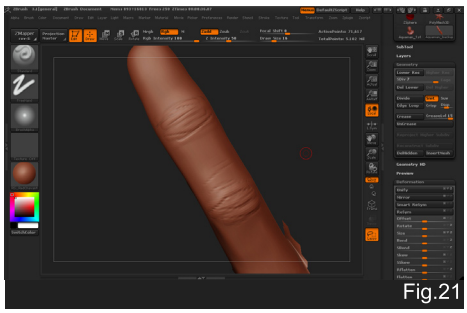
Fig.21

Moving on from the torso and arms now, I start work on the hands, working with each finger separately (remember: to hide parts of your model you simply need to press and hold Ctrl and Shift on your keyboard, and draw a green

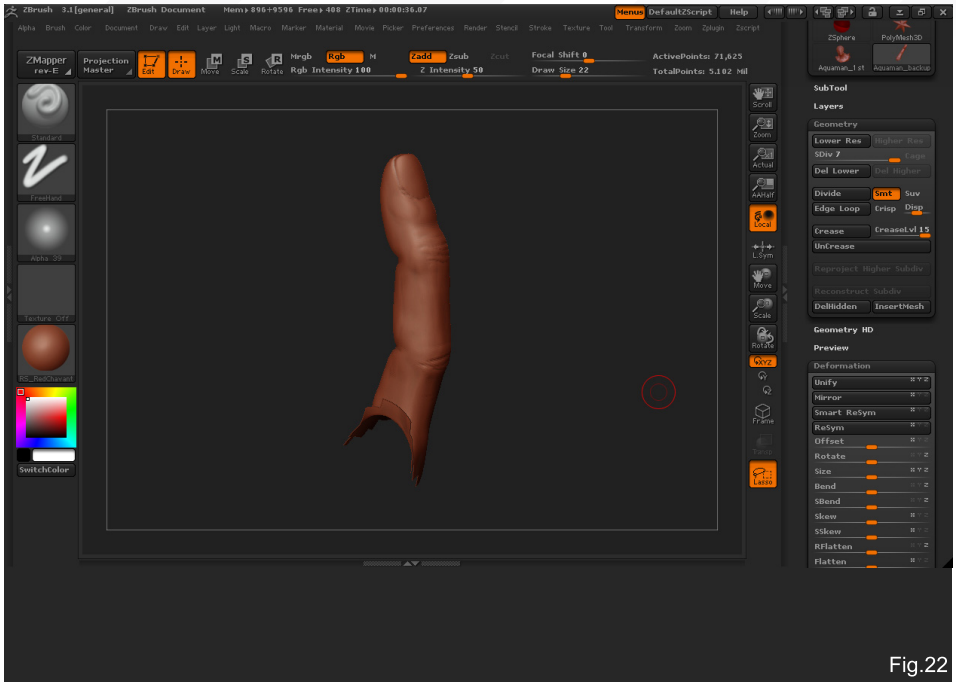
Fig.22

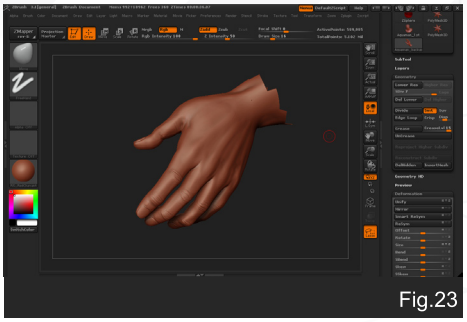
Fig.23

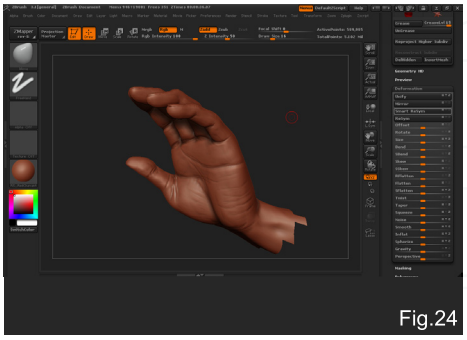
Fig.24

mask over the model). It's difficult to work on the inner parts of the hand when you have all fingers in the viewport, which is why I prefer to work with them individually, using the Clay brush to give some volume to the skin at the joints where the skin creases and folds, and using the Standard brush to add lines and wrinkles to the skin (**Fig.18 – 24**).

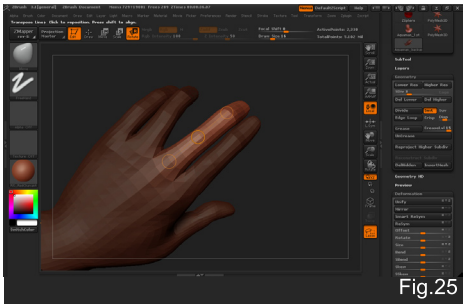
Fig.25

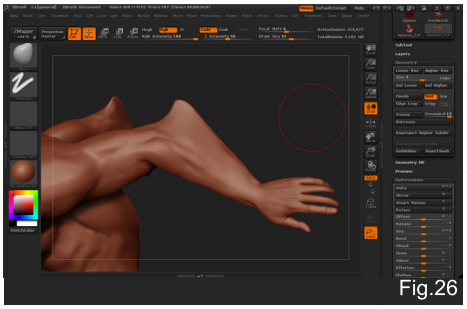
Fig.26

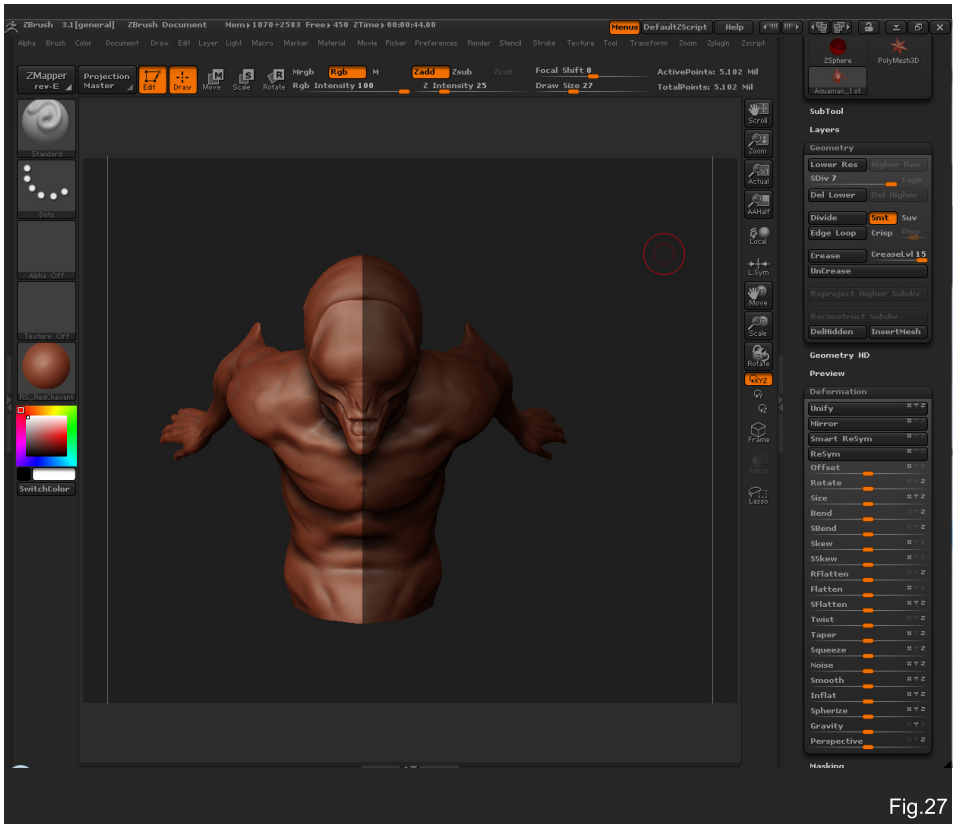
Fig.27

The entire block-in stage of the work has been done in subdivision levels four to six. The finer details are then added in the seventh level. Finishing work on the hand, when happy with the detailing gone into it, I can then make the gesture of the hand much more interesting and realistic looking using Transpose (**Fig.25**). As before, I'm using Transpose to manipulate the model to get the desired pose, in the same way as we did earlier.

Here I add a fin-like element to his arm in order to give more detail to the silhouette, just using the Move tool at this stage to achieve the needed results (**Fig.26**). Using SmartResym again, I add the deformation to the other arm, too, balancing out the design to both sides of the body, as before (**Fig.27**).

At this point, I'm starting to add some more skin plates, scales, and fins to the body by drawing


Fig.28

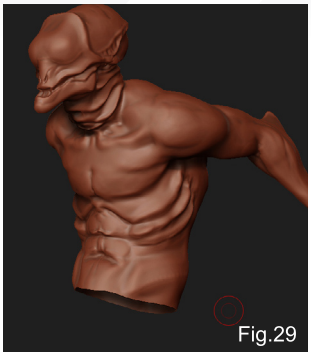
Fig.29

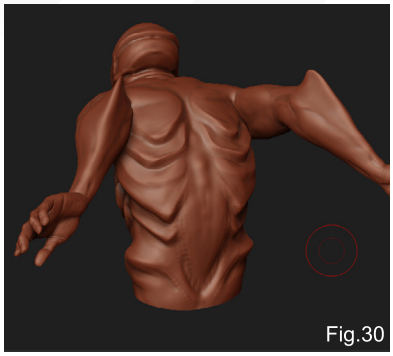
Fig.30

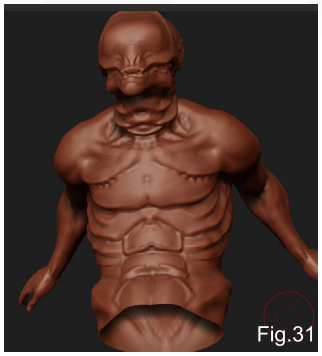
Fig.31

freely with the Standard brush, not worrying too much about the small details, simply trying to respect the natural flow of muscles in human anatomy (**Fig.28 – 31**). I also find the Clay brush useful to use here – it gives a more organic effect and it's a great brush to work on the skin's surface with.

Remember to regularly check your designs in silhouette by using the Flat Shader, as explained earlier (**Fig.32**).

Continuing work now, I add even more skin plates and detail to the spine (**Fig.33 – 37**), still working with the Standard brush and Alpha 39. I'm not using any direct references to sculpt; I'm simply trying to follow the flow of the anatomy and adding features that we'd generally recognize from fish.

To carry on the detailing work I add similar details as just given to the body, onto his arms,

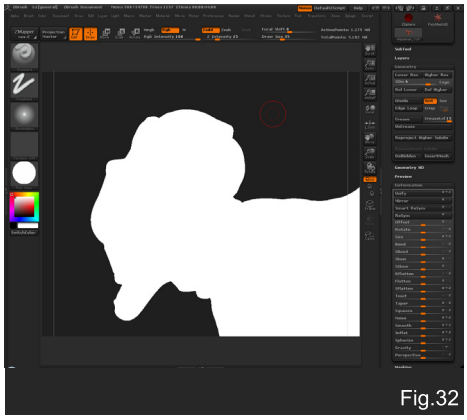
Fig.32


Fig.33

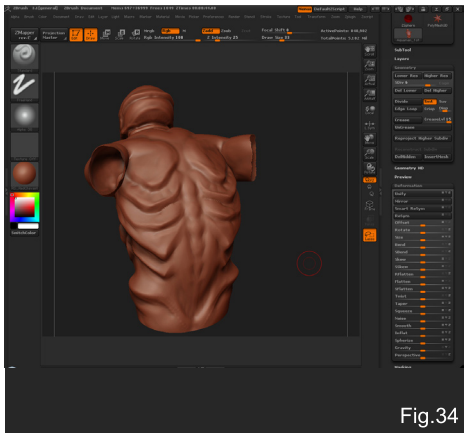
Fig.34


Fig.35

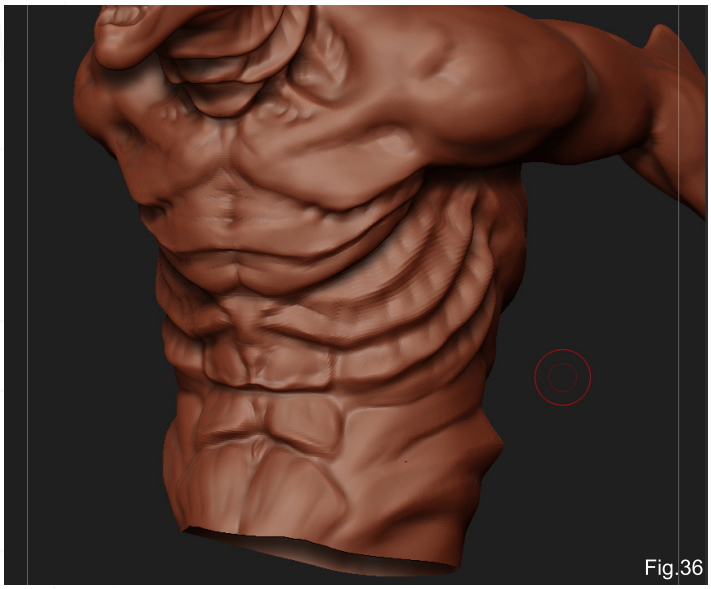
Fig.36


Fig.37

in the same way as before – but this time sectioning off just the one arm to work on it separately (**Fig.38 – 41**).

With the design nearly complete at this stage, it's a good time to check on the silhouette again to see if the concept is still strong before finalizing it (**Fig.42**). For me, design is a very complex thing. There are some techniques you can follow, but to me it is more about a feeling. You have to practice lots and you'll learn to know when to keep going and when you need to stop – it's all about building up experience and experimenting. I like to keep my silhouette very detailed, but it's also interesting to allow the eye to rest in some areas, too, as too much detail can be as big a problem as too little! I think the best training you can do is to observe and copy the work of great artists, as well as use real life as a reference. Try to take notice of when the greats exaggerate details, and when they don't. A good understanding of anatomy is a must-have, as well as drawing skills – drawing is a very powerful tool! I haven't drawn anything in this case, but it is a skill worth developing, even in 3D.

I feel the design is missing something here to be honest, so what I'm going to do is to add some more detail to the neck area to improve the concept (**Fig.43**). I'm creating the new detail using the Standard and Clay brushes. This detail might seem useless, but it helps the eye to stop reading at this point. It's very important that the eye takes some moments to pause when reading artwork, and so I always aim to add some "accents" throughout my models' designs in order to achieve this.

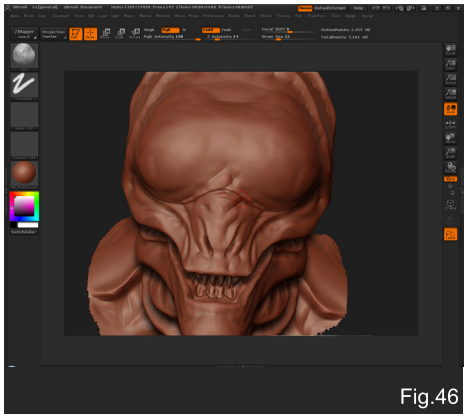
Fig.46

Because organic creatures are not perfectly symmetrical, I'm going to break up the symmetry now at some points and add some final detail to finish up work on the head (**Fig.44 – 48**). You can activate or deactivate Symmetry using the X shortcut key. Again, I'm using the Clay brush to give the skin's surface a nice organic feel,

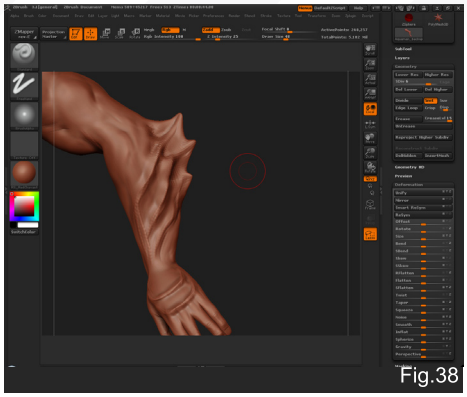
Fig.38

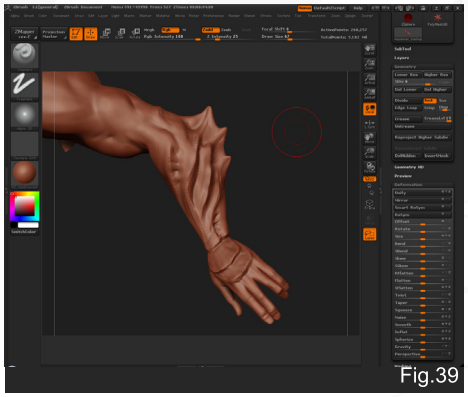
Fig.39

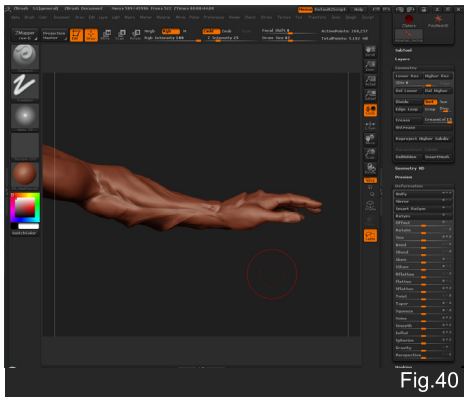
Fig.40

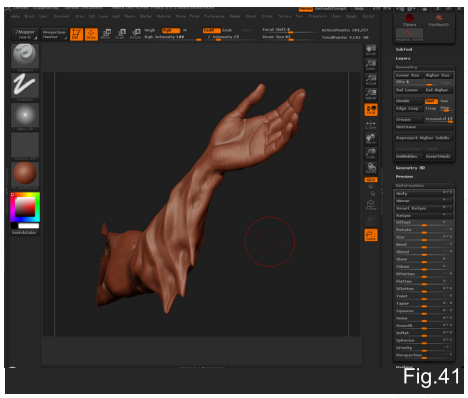
Fig.41

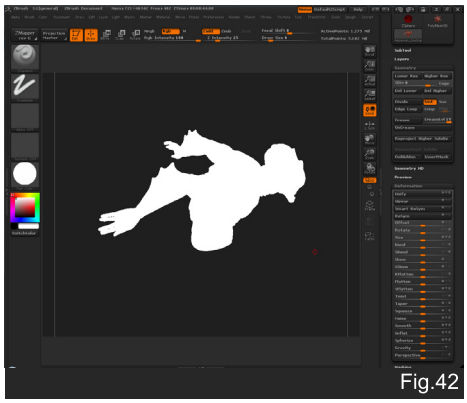
Fig.42


Fig.43

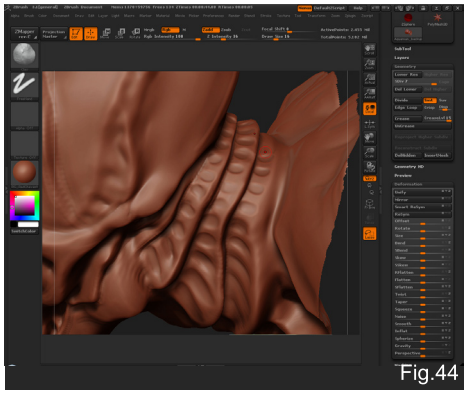
Fig.44


Fig.45

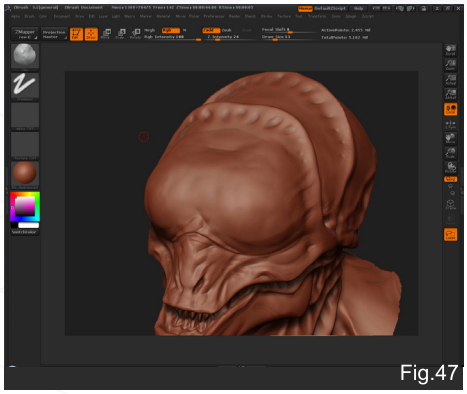
Fig.47


Fig.48

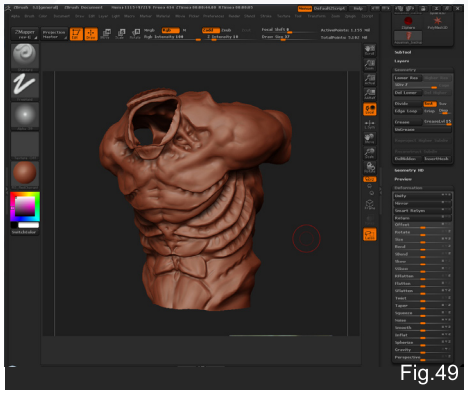
Fig.49

at this stage working in the seventh level of subdivision.

I do the same for the arms and the body, breaking up the symmetry further still to make the creature all in all more believable (**Fig.49 – 51**).

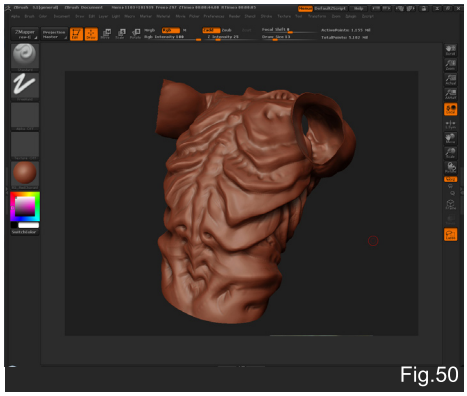
Fig.50


Fig.51

To start giving some relief and impression to the skin and get more realistic results, when working on a creature such as this it's often useful to use the alpha from animal photographs. I can use it by simply dragging and applying it, following the object's surface and the flow of anatomy (**Fig.52 – 55**). To make an alpha you'll need to do this in Photoshop by opening up a photo that you like. Convert it to grayscale and make a soft round

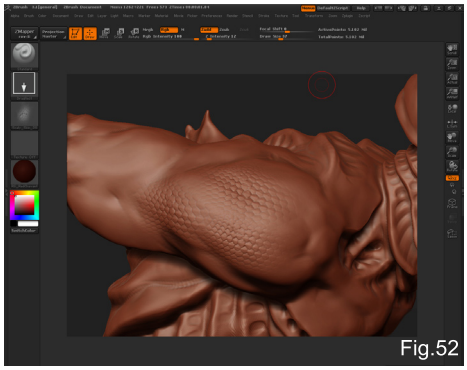
Fig.52

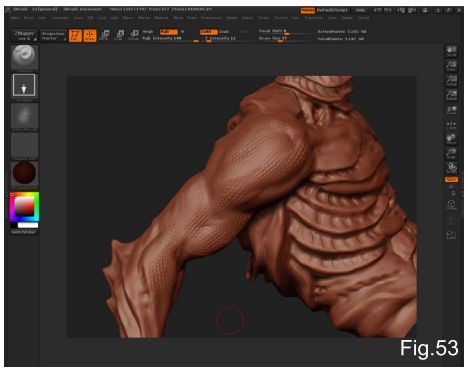
Fig.53

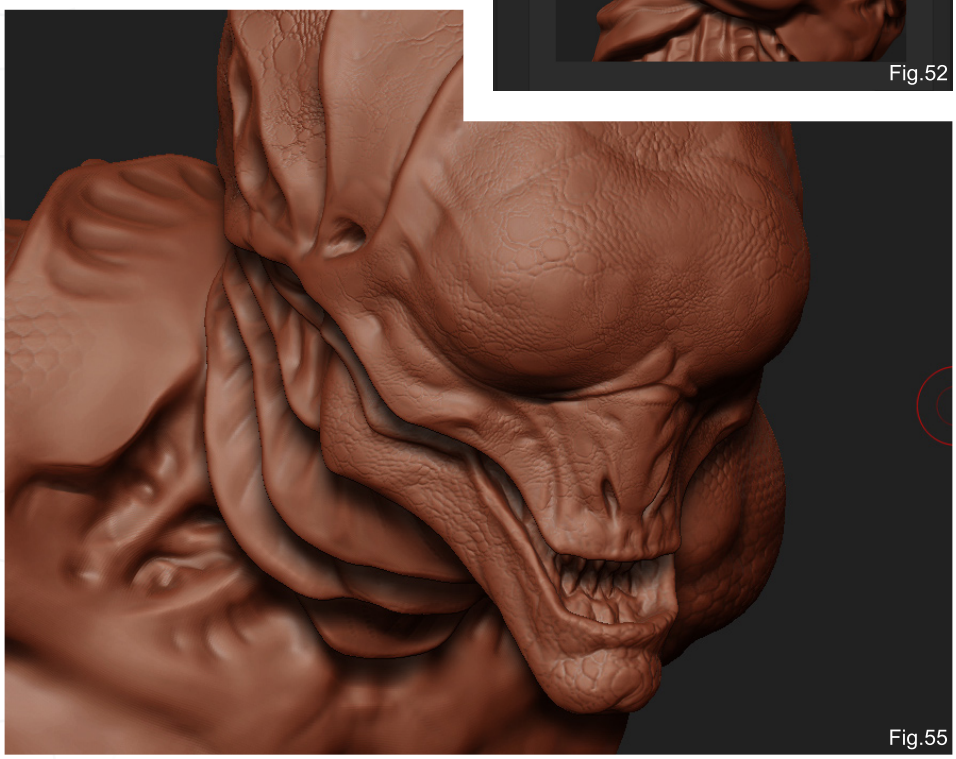
Fig.55

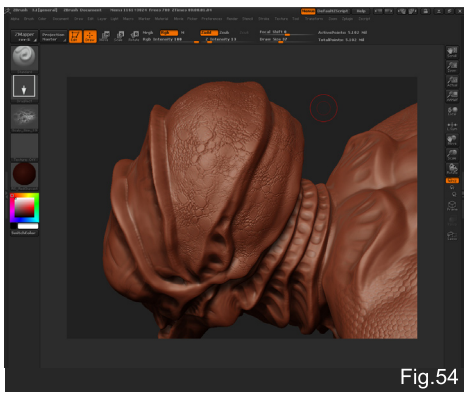
Fig.54

border turning to black. Save this as a PSD and you're done. You can then import this new alpha into your Alpha palette in ZBrush and to use it, simply change the stroke to DragRect and you'll be able to drag the alpha over the surface of your model.

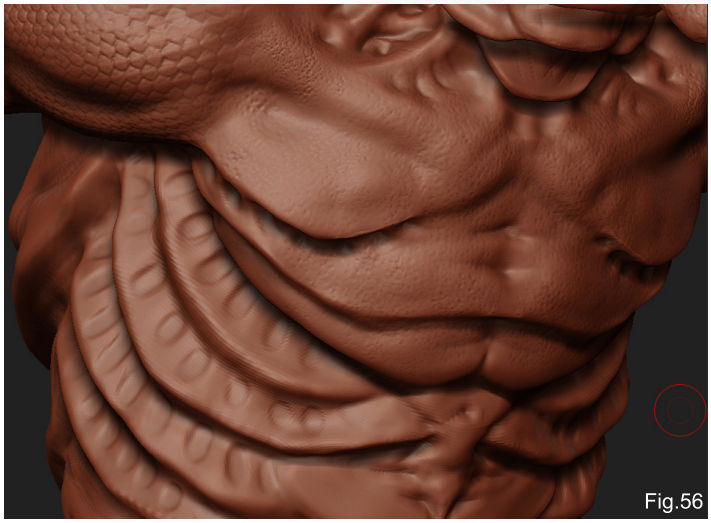
Fig.56

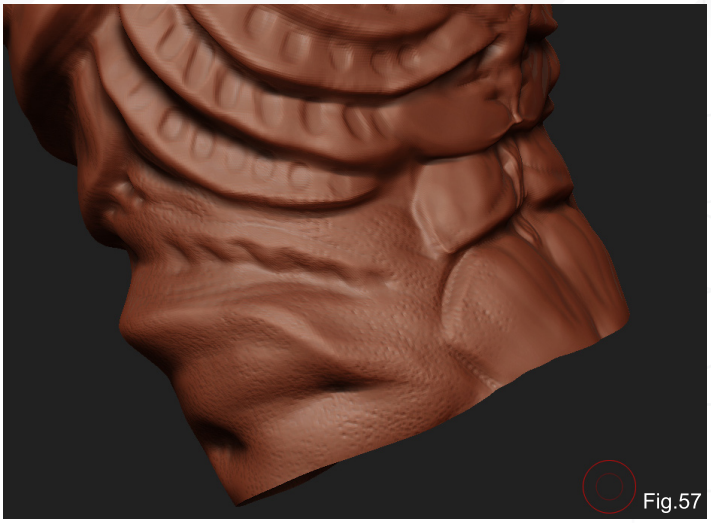
Fig.57

As for the pores, I use the Spray stroke and Alpha 07 to give the skin its ability to breathe and lose it plasticity, making it more believable to the viewer (**Fig.56 – 57**).

TEXTURING IN ZBRUSH

Right then, it's time to start texturing in ZBrush now. I always use a fast shader for textures and avoid using colored shaders for this part of the process. So simply change the color to one that you prefer and fill the object (**Fig.58 – 59**). Simply choose the material from the Material palette (remember it's the sphere on the left-hand side of the screen), and then go to Color > Fill Object.

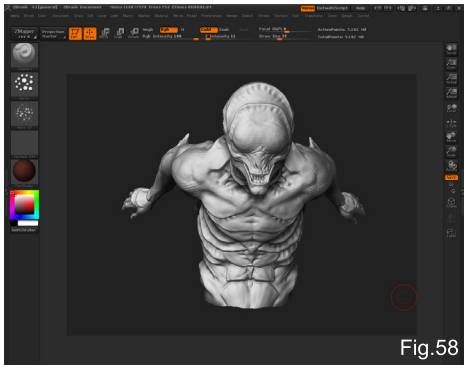
Fig.58

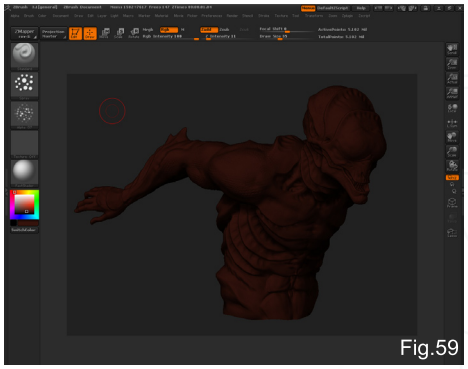
Fig.59

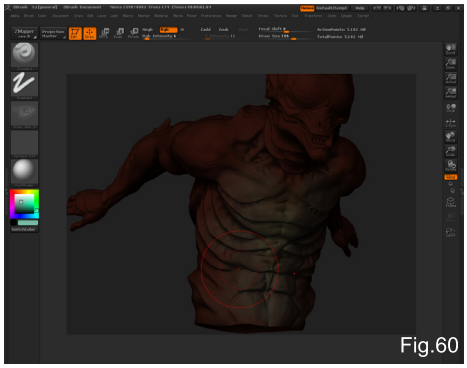
Fig.60

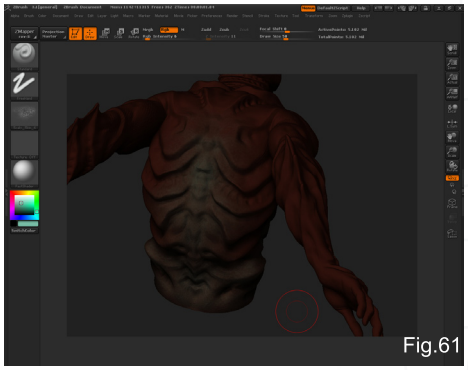
Fig.61

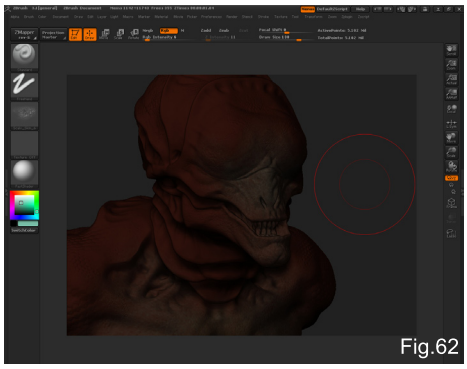
Fig.62

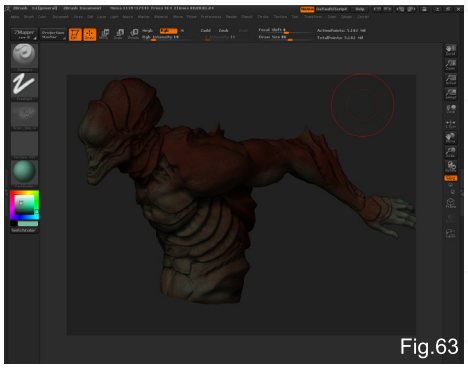
Fig.63

Photographic references are extremely helpful at this stage of texturing. For my own character I'm going to use a photo of a cold water fish, painting some areas with a lighter color – as you can see on some fish – and using an alpha from an animal skin with my brush (**Fig.60 – 63**). Again, to create a new custom alpha you can simply take your photo into Photoshop and follow the afore-mentioned procedure. After you've imported it into your Alpha palette you can then paint using the Alpha as a brush.

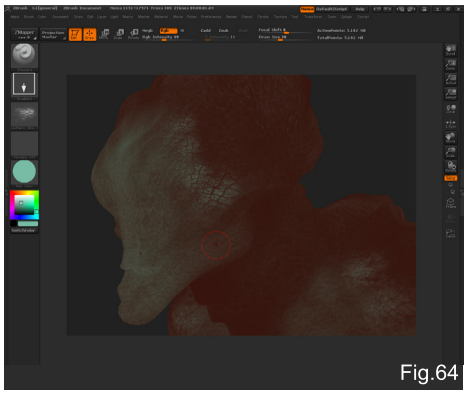
Fig.64

I can also use the DragRect stroke to apply some color, remembering to turn off ZAdd for this part of the texturing process (**Fig.64 – 66**). If you change the stroke to DragRect, you'll be

able to drag the alpha over the surface. If you leave ZAdd turned on, it will apply deformation on the mesh, and at this point we just want the colors, so make sure that RGB is turned on. This technique is good to help you get a better blend from one color to another. Remember to check with the flat shader all the time, though, and sometimes the shadows on the model can start to confuse you when apply texture!

Here I am starting to introduce a third color to the model by painting some of his body with a bluish gray, using the FreeHand stroke and an imported alpha from Photoshop of animal skin (**Fig.67 – 68**).

Working with the Cavity Mask can be used as a great trick to better and more realistic results. Try to use flat color when you're doing this; you can edit the curve and the value of the cavity from 100 to -100 (**Fig.69 – 72**). Cavity Mask allows us to paint only into or around the depressions of our mesh. The values 100 and -100 are the setting to paint just inside and outside the cavity, but you can also edit the curve to get different results. Try playing around with the settings of this powerful tool to better understand how it works.

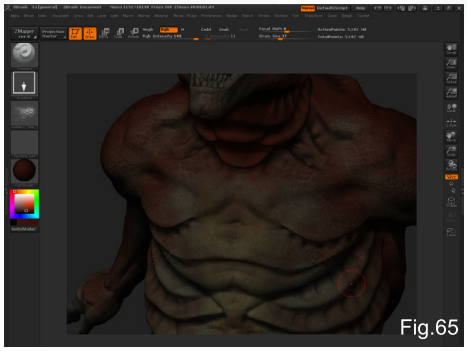
Fig.65

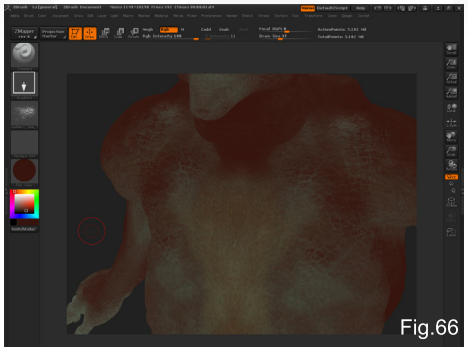
Fig.66

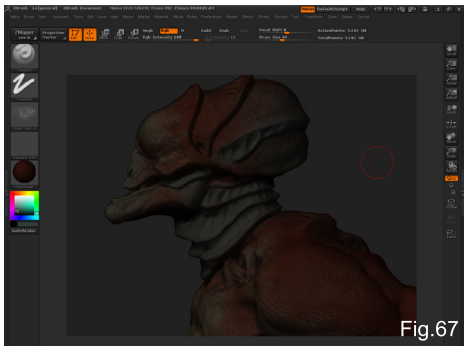
Fig.67

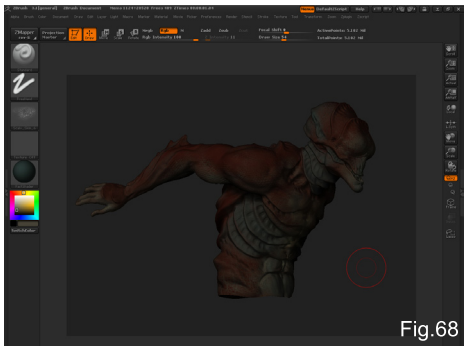
Fig.68

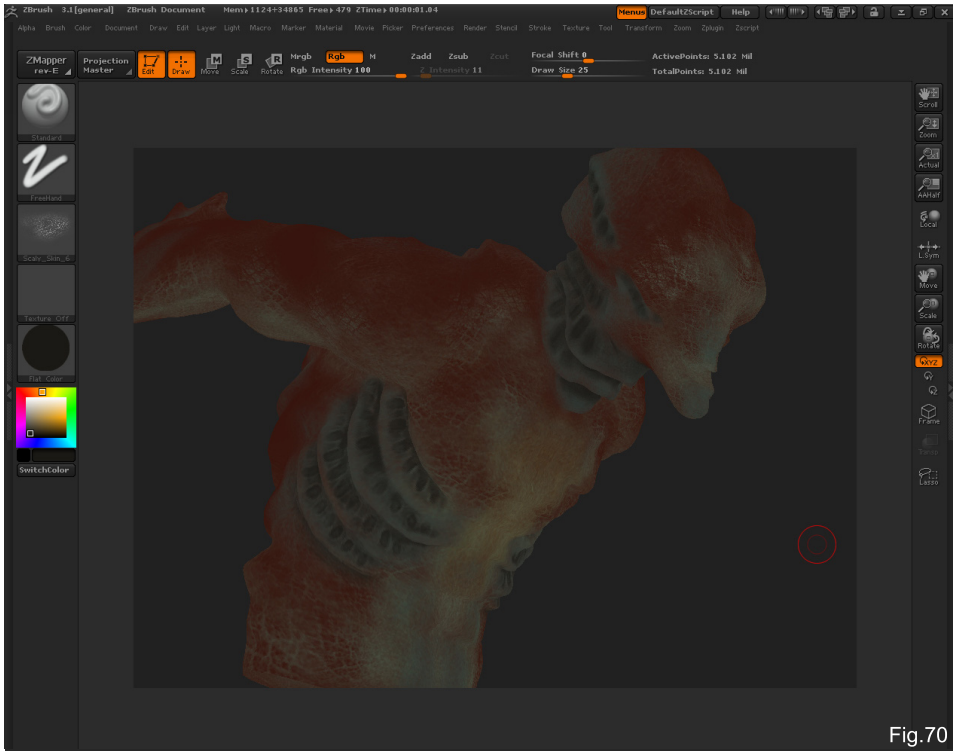
Fig.70

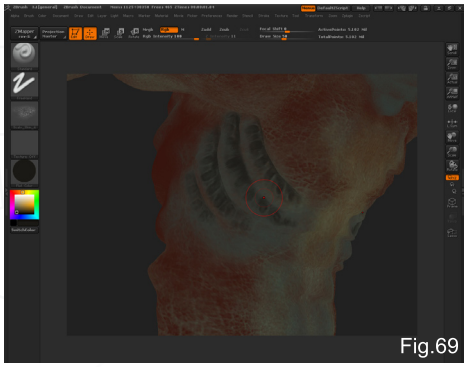
Fig.69

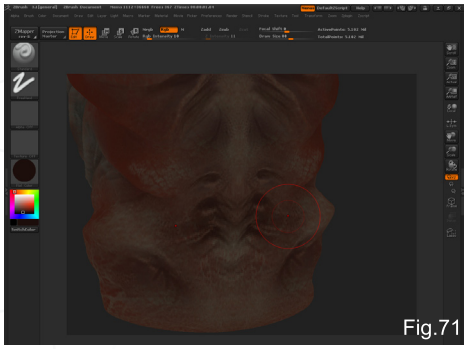
Fig.71

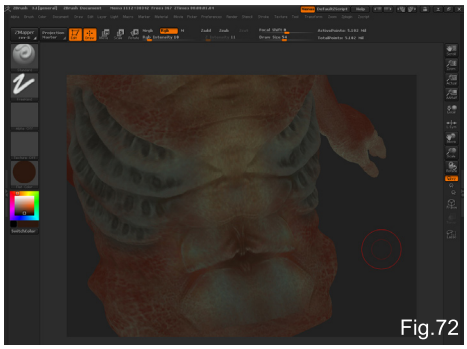
Fig.72

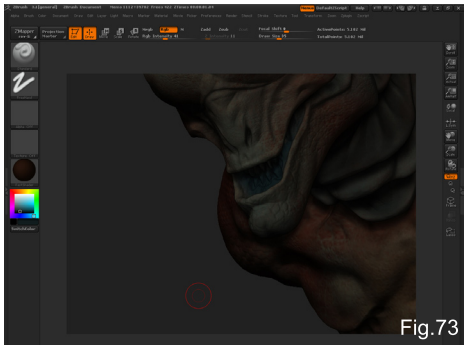
Fig.73

With the head and torso pretty much sorted color wise now, I continue by painting the interior of the mouth (**Fig.73**), and then move across the body simulating shadows through a new range of blue tones (**Fig.74 – 75**). These shadows are sort of an "occlusion". Try to simulate some soft shadows on the contact areas – not actually a dark shadow from a point of light, but something soft.

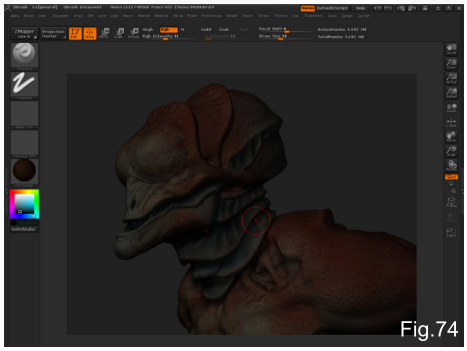
Fig.74

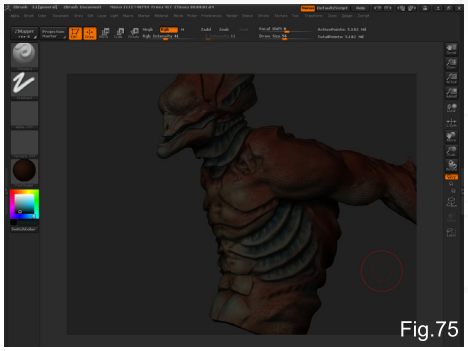
Fig.75

Moving onto the arms now, I want to give them some more interesting colors – particularly to the forearm. I go in with a mix of hot and cold colors (**Fig.76**).

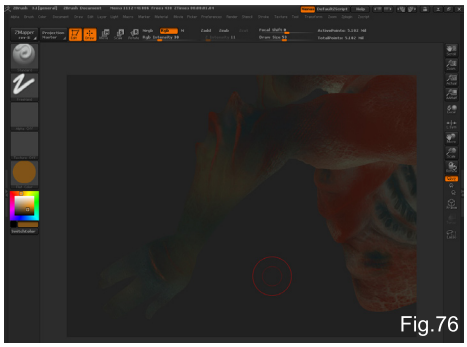
Fig.76

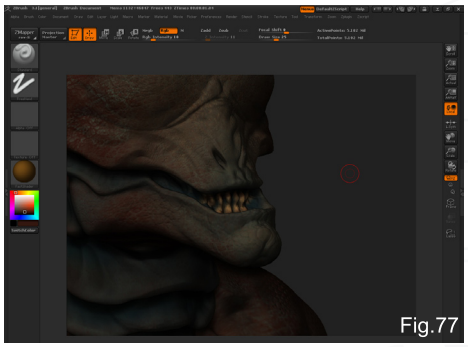
Fig.77

The teeth need some attention now, and I paint them using a yellow tone with a hint of brown to give them a dirtier, aged look (**Fig.77**).

Nearly finished now! I'm just applying some veins using DragRect and Alpha 22, trying out a variation of green, blue and red veins on the skin (**Fig.78 – 79**).

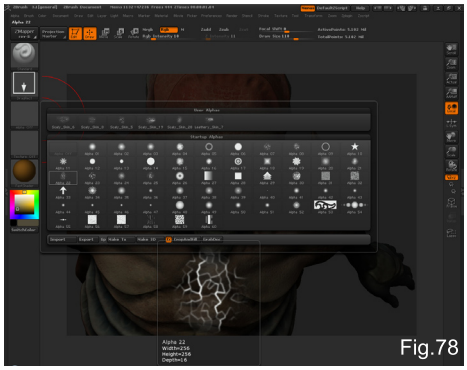
Fig.78

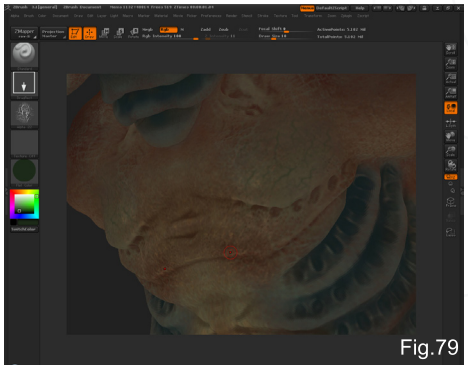
Fig.79

Finally, to finish up the texturing of my model, as I'm pretty happy with what I've achieved until now, I'm simply taking an overall look at the character and then going into areas to add more

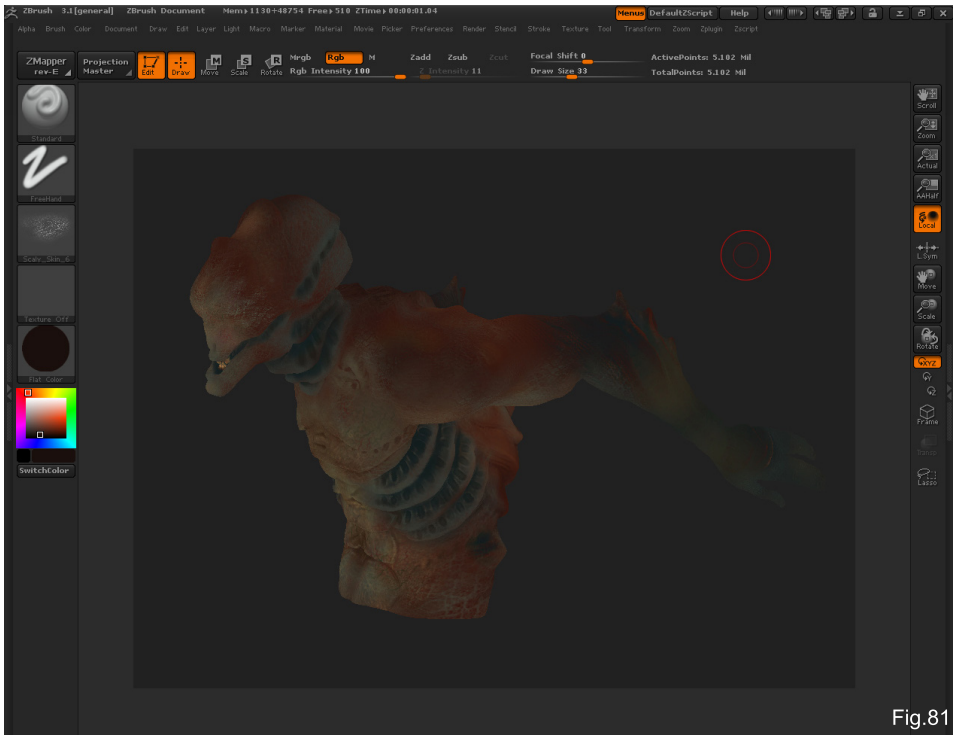
Fig.81

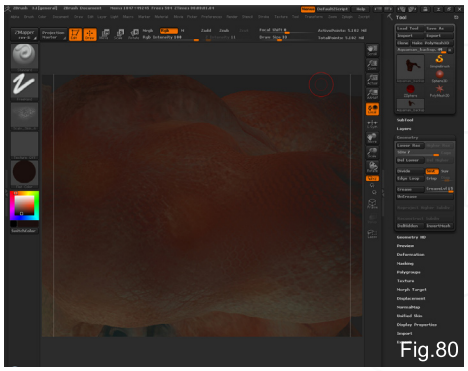
Fig.80

detail with the Cavity Mask, to really finish things off (**Fig.80 – 81**). At this stage you have to make sure that there aren't any details missing – we have to try not to let our earlier hard work not go to waste in this last stage!

And here is the final model, complete with textures (**Final.01 – 04**).

RENDERING

When you're happy with the coloring of your ZBrush creation you can then go on and render it. You can find lots of great MatCaps at the ZBrush Download Center: www.pixologic.com/zbrush/downloadcenter. There's plenty of good stuff there, including some nice plugins and videos which are always very helpful.

Pretty much any default material in ZBrush is affected by light, as well as lots of other MatCaps, too. But if you play around with lighting and some different MatCaps, you'll soon realize that not all of them are affected by the lighting scenario, so do be careful and pay attention when using new MatCaps.

Before you render you'll need to set up your lights first of all. So go to Menu > Light – there you'll be able to play with your light settings; you can change the direction of the lights by using your cursor and rotating the sphere. You can any increase the number of lights if you need more by simply clicking on the small light icons. Below the lights you can change the light color and intensity of them. And if you open up the Shadow option on the bottom of the Light menu, you can change the shadow intensity by playing with the Aperture and Length settings. It's very important to make some quick tests, just playing around with all the different light settings, in order to better understand what each is used for and what it can achieve.


Final.01


Final.02


Final.03


Final.04

With your lighting setup ready to go, you need to render. So go to Menu > Render – there you'll find the render options. You can turn on the Fog and Depth Cue functions, and you'll also find a slider to change the intensity and range of the depth of field. If you open up the Fog menu (you can find it right below in the Depth Cue menu) you can change the color of the first and forth quads to a darker color (I usually use a very dark gray and a dark bluish gray). Once again, you can change the intensity and range of the fog using the sliders. As usual, play around with the settings to increase your understanding of what they do. When ready, click on the 'Best button to render.

To create a final image of my character I render out the following render passes in ZBrush:

- **Lighting** – a fast shader with no textures
- **Mask** – using Flat Color will allow us to separate the character from the background
- **Constant Diffuse** – using Flat Color with textures you can get back some of the texture detail lost after rendering, as well as getting better contrast over the final image

- **Depth** – this is really helpful to get the correct camera depth of field. I create this pass using Flat Color with no textures, playing with the Fog settings (to find Fog go to Render > Fog)
- **Occlusion** – using a MatCap called MatCap White01, with no textures, I pull the color towards blue
- **SSS** – I use a MatCap called RS_SkinBase with textures
- **Specular 1** – I use the MatCap called Bonus 02, which is a regular specular for skin
- **Specular 2** – I use the ToyPlastic MatCap with the black color to get a wet-look appearance and to break up the specular, bringing the look closer to something we'd recognize on real fish

With all my render passes done, I take them into Photoshop, relax, and then have some fun playing around with the layer blending modes, Brightness/Contrast values, Hue/Saturation settings, and the Blur filter. Here is the final result after some post-production in Photoshop (**Final.05**).

Conclusion

I found the workflow that I employed for this piece quite successful, although I do recommend that you come up with a more exact idea of what you want to model before you start a new character design, as I'm sure I could have come up with a much better design for this creature, in hindsight, if I had done some preliminary sketches at the beginning. Another nice process that can improve character creation is to retopologize your model, make a UVW map and export the maps (displacement, normal and diffuse) in order to then render your image in other 3D software for better results. This is particularly a good, quick workflow for animation production.

I hope you've found this tutorial helpful, I'd like to thank the 3DTotal team for the opportunity to create this tutorial for you all, it has been really fun to work on – thank you for reading!

Diego Maia

For more from this artist visit
http://maia3d.blogspot.com/
or contact
maia3d@gmail.com

Eva Wild

Female Characters Creation

Introduction:

The 'Eva Wild Series' – Our aim in this series is to provide comprehensive lessons to produce a complete fully rigged, textured and anatomically correct female character. This series fits well into 3 DVDs with 3 separate professional 3ds Max instructors taking you through each if their specialties in very detailed step by step processes making this training suitable for artists of all levels.

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- Complete step by step modelling of the Eva Wild character.
- Teaches the importance of studying human anatomy.
- Provides clear diagrams showing muscle flow and bone structure.
- 14 hours of comprehensive training.
- Suitable for artist of all levels.

Part 2 - Texturing, Mapping & Clothing:

- Complete step by step texturing process of the Eva Wild character.
- Modelling and Texturing of Eva Wild garments.
- Lighting the character.
- 4 hours and 47 mins of comprehensive training.
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- Complete step by step of setting up a fully animatable rig for the Eva Wild character.
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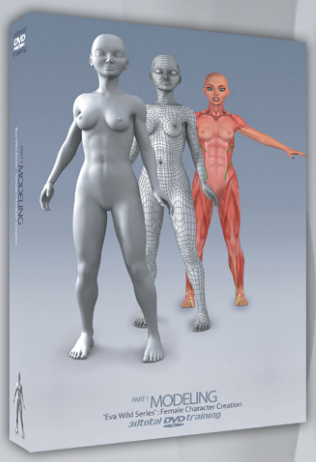

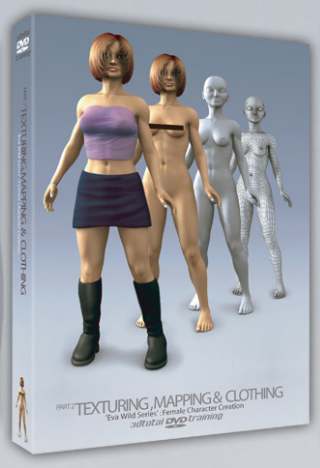

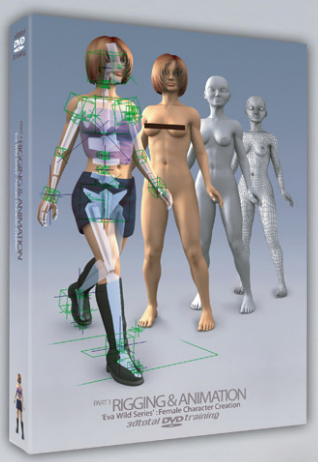

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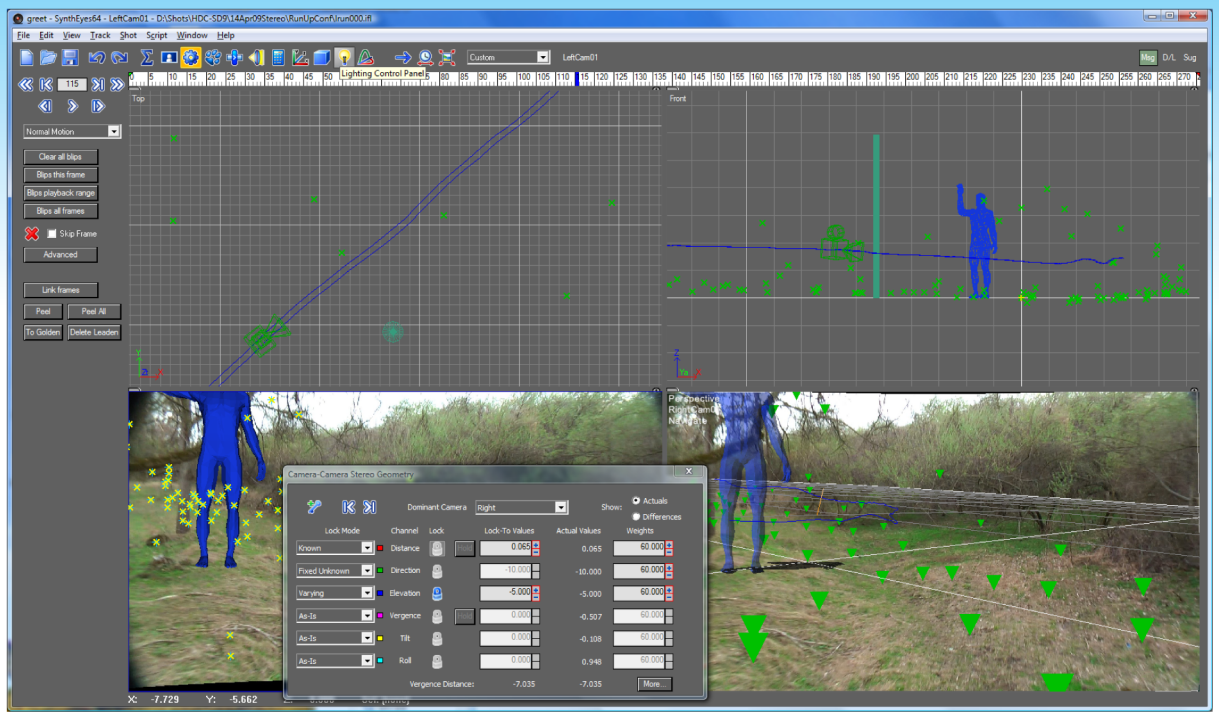

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This series of three tutorials will take as its starting point a simple 3d scene with a limited number of objects and a low to intermediate amount of geometry and show how from a library of photos, custom textures can be created in Photoshop. All of the reference images will be taken from 3dTotal's Total Texture collections and form the foundation of the exercise. We shall show how numerous images can be combined and fused into unique templates and be used to describe a variety of materials and create the illusion of detail and volume as opposed to using actual geometry.

CHAPTER 1 | AUG 09

This chapter will look at building up the base layers and the importance of color correction and move onto the value of Layer Styles and the ways in which these can be used to provide the illusion of volume. Blending modes will also be touched upon and how these help to build up a number of semi-transparent layers with a rich textural depth and level of detail.

CHAPTER 2 | SEP 09

CHAPTER 3 | OCT 09

DOWNLOAD HERE!

The texture used within this tutorial from the Total Texture Collection

CHAPTER 1

Software Used: Photoshop

INTRODUCTION

Over the course of this tutorial we will be looking at some of the techniques used to texture a simple scene, and how to go about creating custom textures from a library of photos. We shall deal with some of the general principles concerned with texturing, as well as how to successfully combine different photo references into a single template.

During this series we will follow the process of selecting the base textures for the scene, through to the building of details, and culminating in a section devoted to adding dirt and grime and applying dirt maps.

Fig.01 shows the 3D scene in question, and the eventual lighting that will be used. In terms of a single render, or "still", I find it is very useful to set up the camera and light rig before opening Photoshop, as this determines what will be evident in the final image. In this case, one could realistically get away with texturing just one half of the barrel, for example.

The first thing to do before doing any texturing is to gather some reference material and look at a variety of different surfaces and photos in order to better understand your subject.

I am not going to provide an account of mapping and unwrapping in this tutorial, but suffice to say that this is a crucial part of the texturing process.

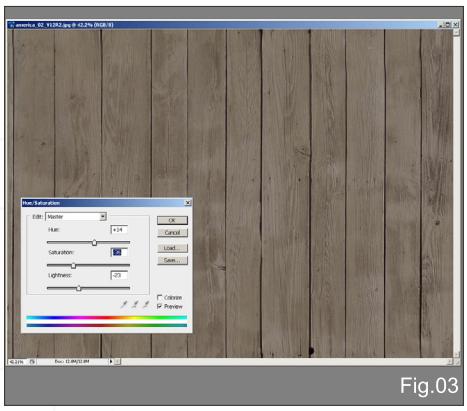


Fig.03

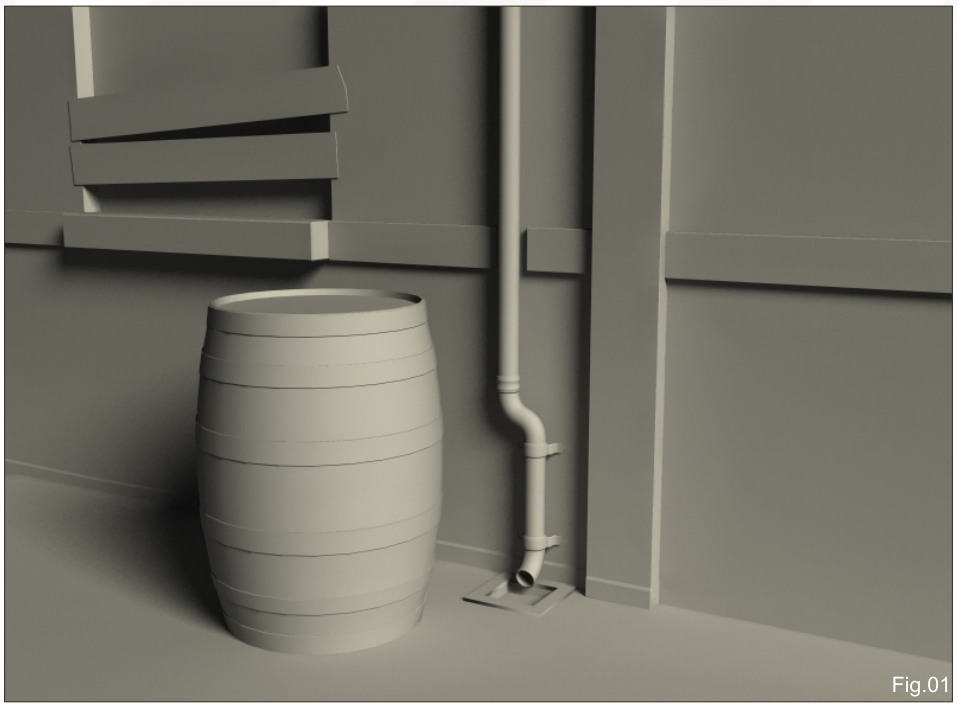


Fig.01

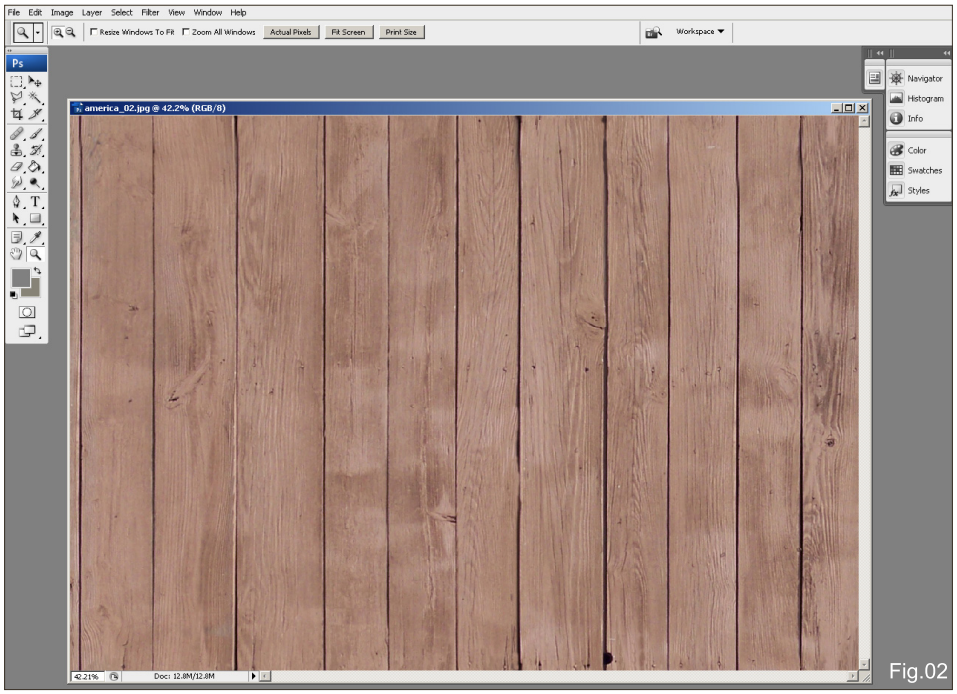


Fig.02

I've decided to unwrap the barrel and drainpipe onto a single template, and begin with these, as they are the focal points in the scene.

BASE LAYERS AND COLOUR CORRECTION

I've looked at quite a few wood textures and decided that the most suitable is "america_02", which comes from the Total Textures Collection V12: R2 – Textures from around the World 1 DVD (**Fig.02**).

This texture has an even, all over look with the right sized gaps between the wood, and with a suitable sense of age. The main problem is the color, but by going to Image > Adjustments > Hue/Saturation I can make it a little darker, as well as reduce the red tint (**Fig.03**).

This will now make a good base for the barrel and allow me to have a "blank canvas", as it were, to start building the detail. Some other wood textures I considered can be seen in

Fig.04, but these were rejected for various reasons. The upper left one could have been used but looked more symmetrical by comparison and therefore did not have such an interesting and handmade appearance. The lower left image looks too clean with hardly any spacing between the slats, but more importantly has the wrong scale. The image to the right also has too small a scale, but also shows more rounded edges, which do not fit in with the subject. What I like about the chosen texture is that it has a suitable scale and some variation between the slats, but is at the same tileable without too many obvious patterns that will repeat – important factors when selecting an image.

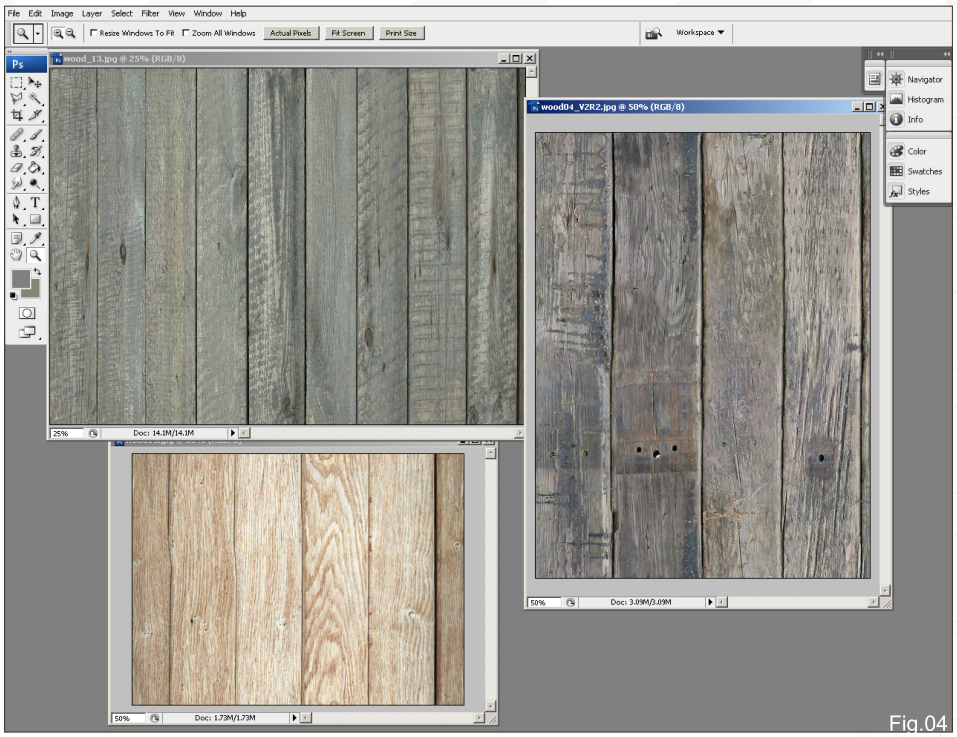


Fig.04

After being color corrected the photo is pasted into the template, scaled and tiled accordingly. Any image that is tiled will show some evidence of this, and although this picture is pretty consistent there is a small hole that shows up (**Fig.05**). The best way to solve the problem is to use the Clone Stamp Tool and remove it. The other issues are the two slightly wider

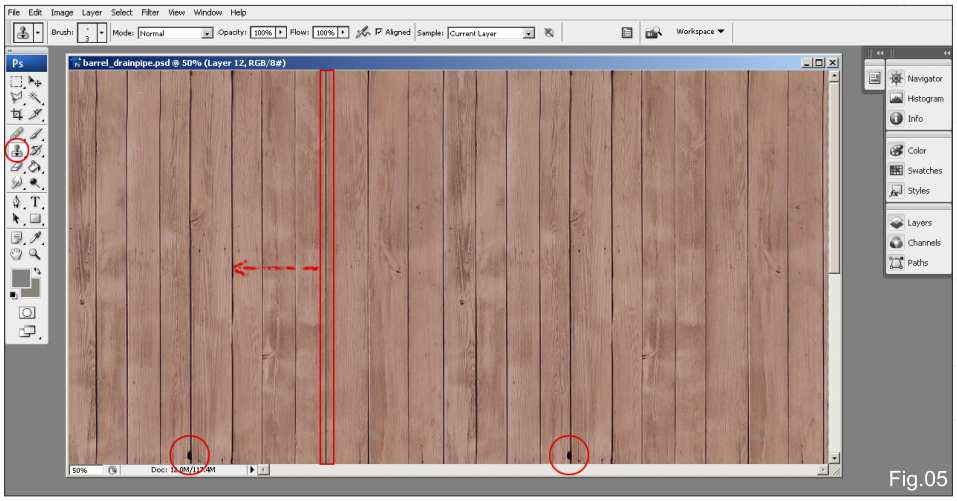


Fig.05

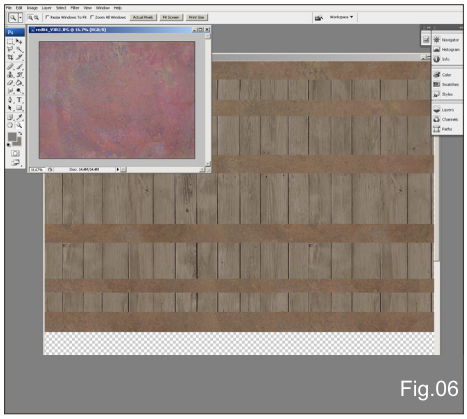


Fig.06

gaps which can be resolved by copying another section and pasting it over the top, and then blending in the edges using a soft Eraser.

LAYER STYLES

It is now time to choose a metal texture that can be used to form the metal strips around the barrel.

Fig.06 shows a metal texture which has been used, but with some much needed corrections (a combination of Image > Adjustments > Color Balance / Brightness/Contrast / Hue/Saturation). Again, you can see that in context it shows variation, but with no conspicuous markings that repeat. In this instance I have actually extruded the sections of geometry that constitute the metal sections (see Fig.01), but even so, it is often a good idea to reinforce this in the texture, thus emphasizing the volume and solidity within a scene. Adding subtle shadows into the texture adds depth and richness, and although it has a bigger impact on low poly models, it can also help on higher detailed meshes by creating some shading even under low or indirect lighting conditions.

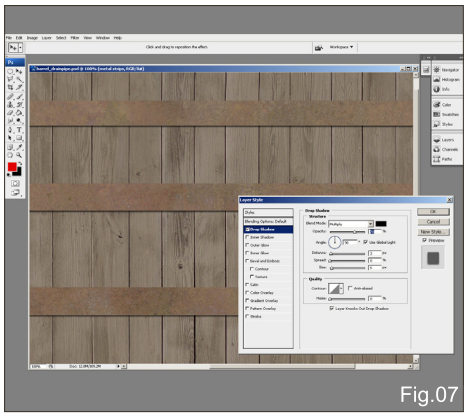


Fig.07

To achieve this on the metal I use a drop shadow by going to Layer > Layer Style and using the following settings shown in **Fig.07**.

If you are rendering a still you can save out an Ambient Occlusion pass for a similar effect, or alternatively set up a light dome rig in your 3D scene and bake the shadows directly onto the texture.

Despite extruding the metal strips around the barrel I decide to texture the studs, as these are so small and do not warrant extra geometry. To do this use the Elliptical Marquee Tool to form a circular selection on the metal strip (shown as red in **Fig.08**) and copy and paste into a new layer (Layer 12). This, at first, will appear almost invisible, but now go to Layer > Layer Style and apply a Bevel and Emboss and Drop Shadow. This can be enhanced later in the bump map, but is a useful technique to use if the object is small scale with minimum dimensions.

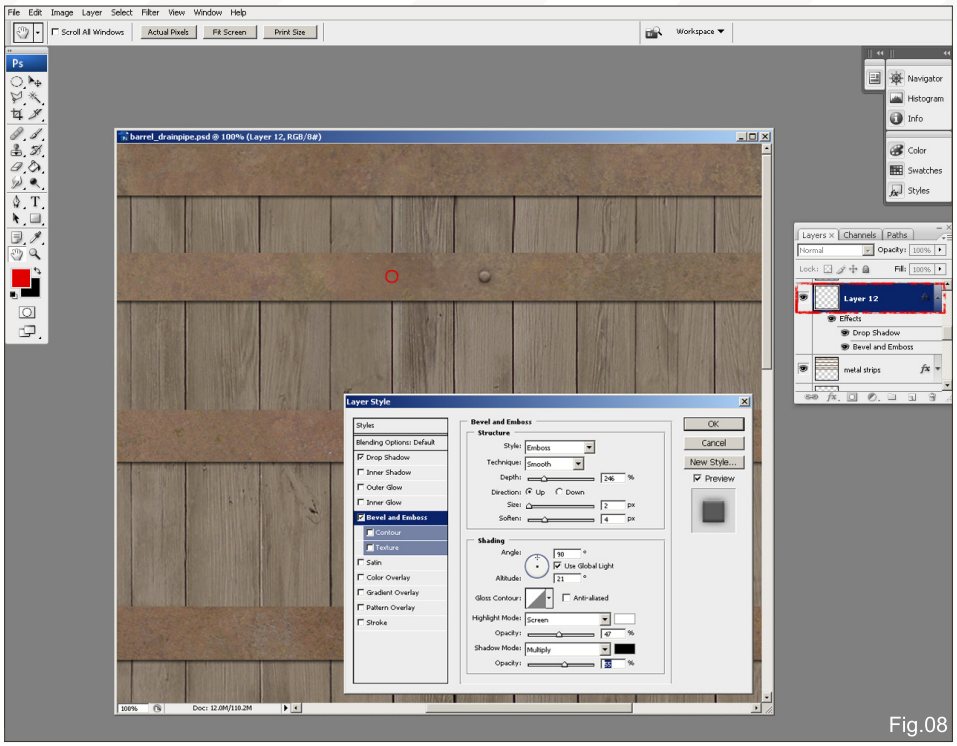


Fig.08

Blending Modes

To add some variation to the barrel I am now going to use three slats from an earlier wood texture ("wood04" from the Total Textures Collection V2: R2 – Aged and Stressed DVD – see Fig.04). I copy and paste three sections into my file and scale them to fit neatly into three sections. I lower the saturation and brightness by way of Image > Adjustments > Hue/Saturation and also reduce the contrast, and then chose Overlay as the blending mode (**Fig.09**).

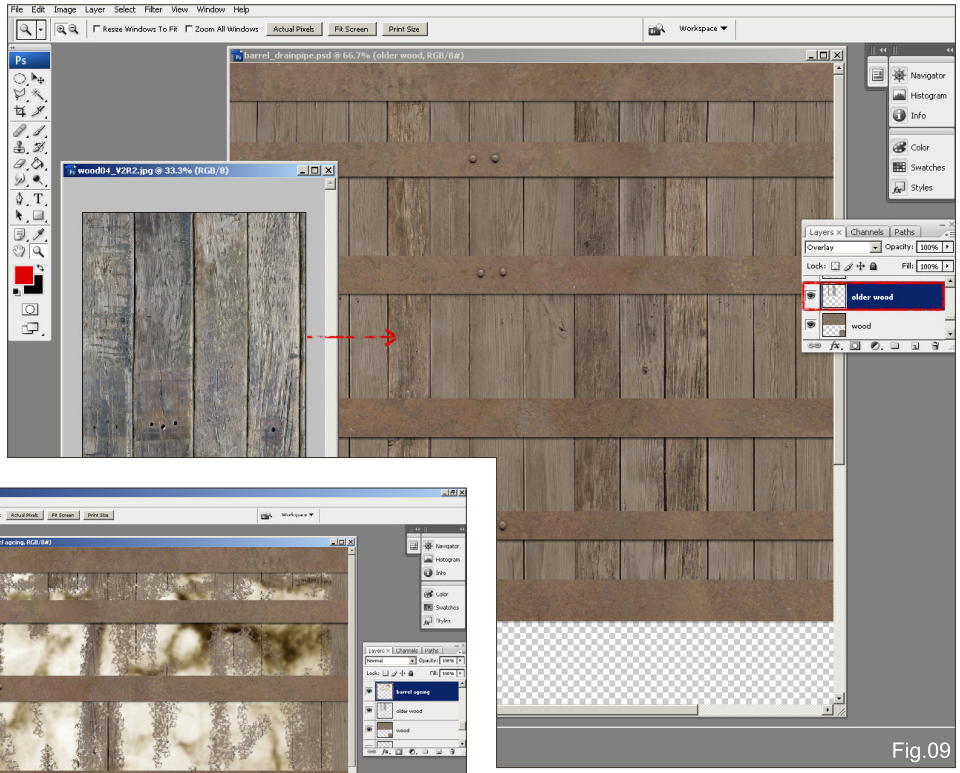
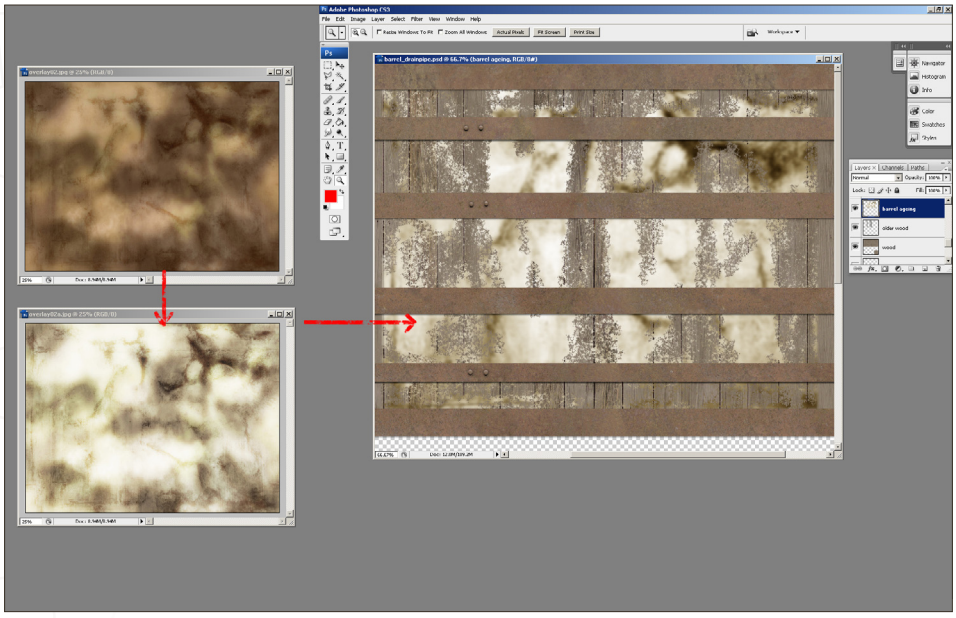


Fig.09



This is the first stage of creating variation across the barrel, but a further step will enhance it even more. This time I select "overlay 02" from Total Textures Collection V1: R2 – General Textures DVD and color correct it to look greener with a higher contrast (**Fig.10**). I then paste it into my file and use a textured Eraser to form some random shapes.

Once happy, I set the Blending Mode to Soft Light at 50% Opacity, as seen in **Fig.11**. Alternatively, it could have been left on Normal mode at around 30% Opacity for a similar quality.

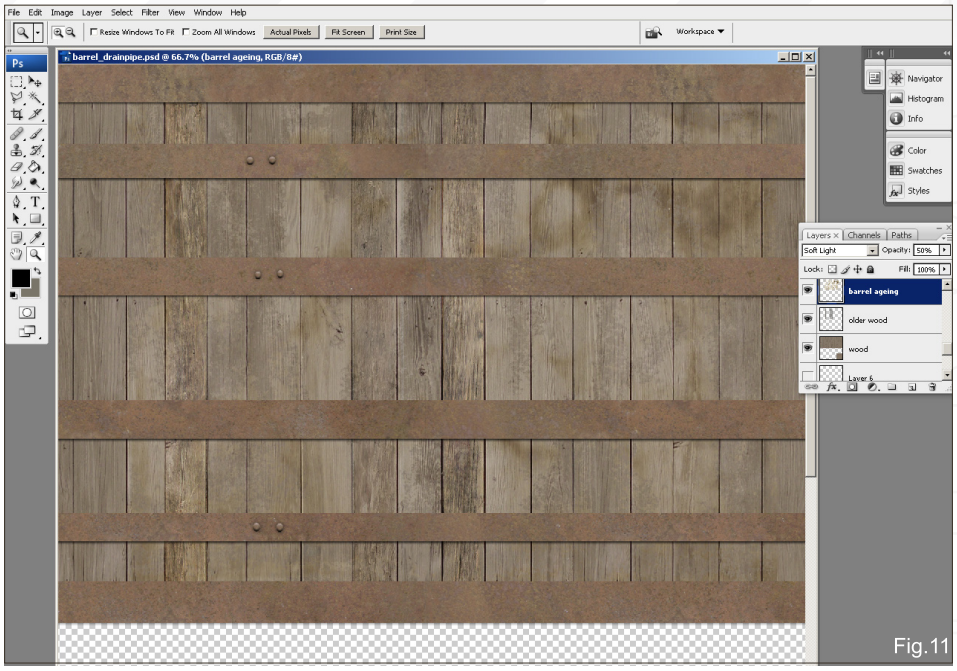


Fig.11

As we have done with the wood, the same approach can be used on the metal. In **Fig.12** I have selected a rusted metal ("metal19" from Total Textures Collection V2: R2 – Aged and Stressed DVD), color corrected it, and then pasted it into a new layer. On the left you can see the photo set at Normal mode at 100%, and the eventual setting on the right at Soft Light, 68% Opacity. You will notice that I have darkened the section next to the arrow, just to break up the symmetry a little more.

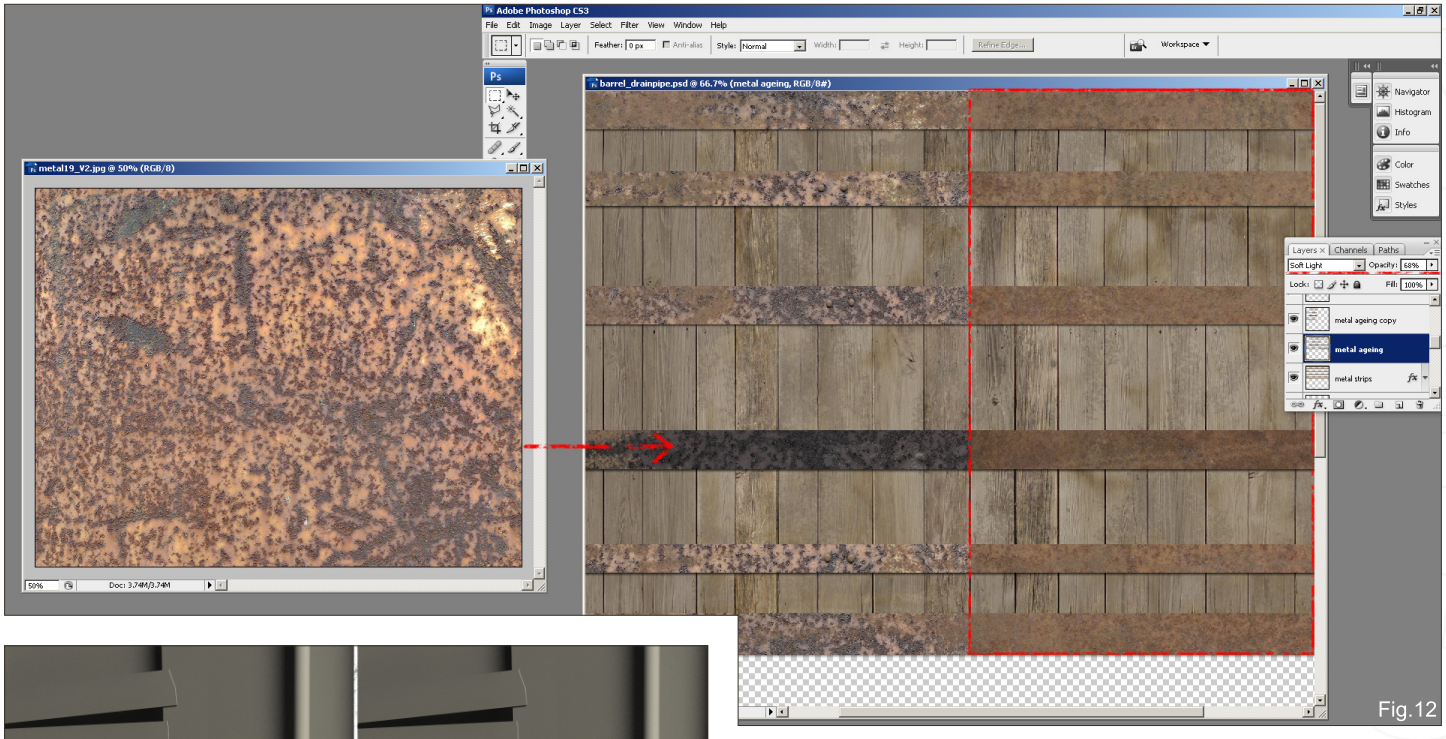


Fig.12


Fig.13

In **Fig.13** we can see on the right the difference these extra layers have made, compared to the single base metal and wood texture on the left. The barrel still looks reasonably clean but it has more variation across its surface and appears older. There is still more detail to add with regards to staining, rust and grime, etc., which we will cover in Chapter 3, but you can see how using multiple layers with various blending modes and opacity can enrich your textures.

GEOMETRY VS. TEXTURES

We will come back to the barrel later in the tutorial, but I am going to shift the attention to the wall now as this makes up a large section of the scene.

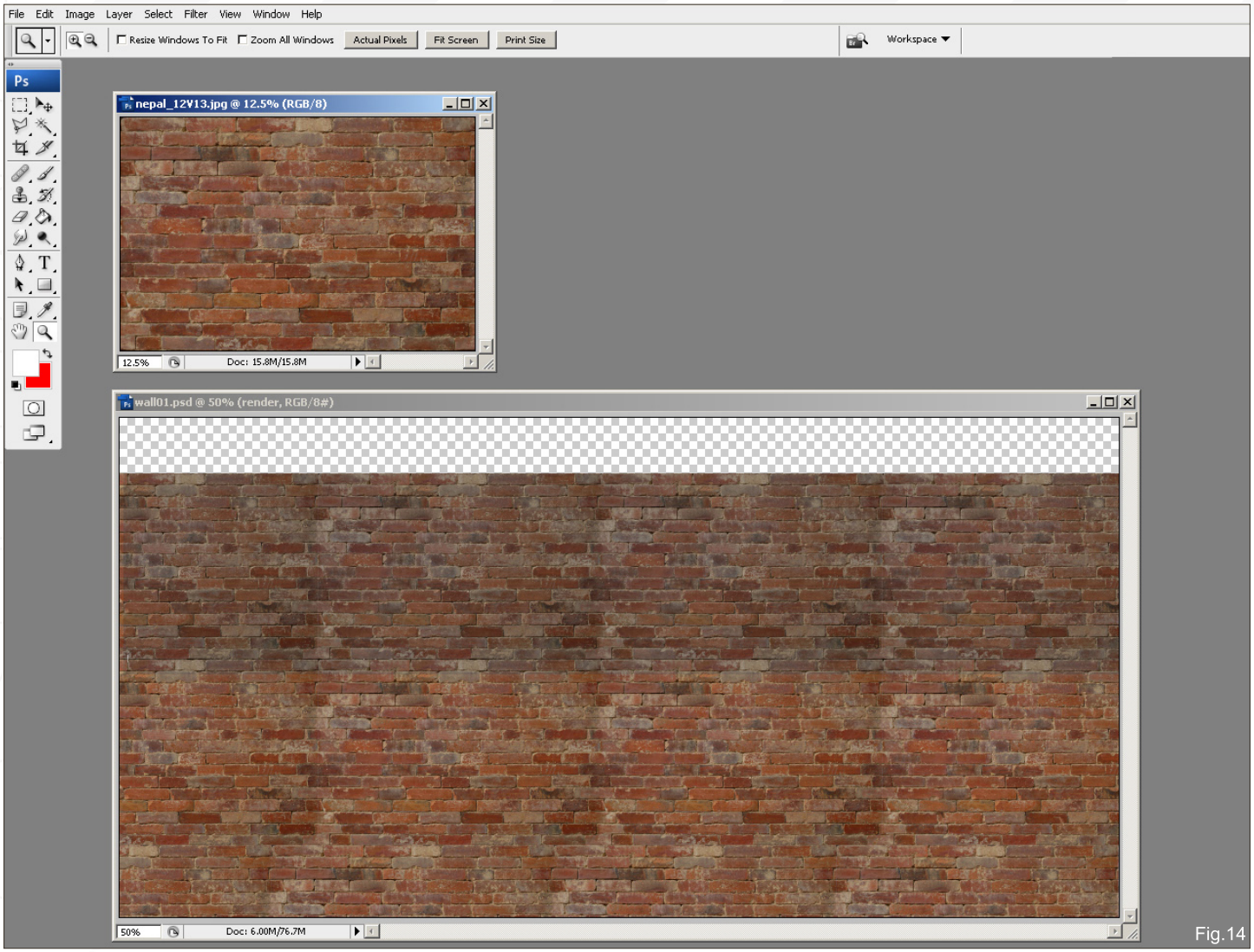


Fig.14

Elements of the wall have been modeled, such as the window, column and row of bricks parallel to the windowsill, but I want to contrast this with purely textured aspects to draw a comparison between the two approaches.

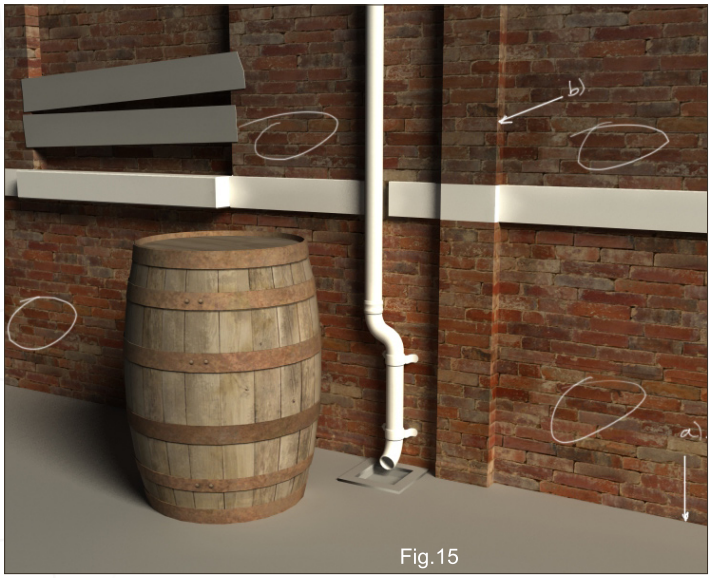


Fig.15

Firstly I apply a brick texture to the entire wall section. I scan through the numerous examples in the Total Textures collections and eventually choose “nepal12” from the V13_R2 Total Textures Collection V13: R2 – Textures from around the World 2 DVD (**Fig.14**). This had to be scaled and tiled accordingly, and you can see how this method can reveal the problem of symmetry. If you have unwrapped the mesh then this can easily be rectified by “painting out” conspicuous areas. The best thing to do is to assign the texture to your scene and see which areas require attention, as some problem areas may be hidden from view (behind the barrel, for example).

In **Fig.15** the bricks have been applied and overall the texture works well, barring a few problem areas. My eye is drawn immediately to the areas ringed in white, which show tiling problems:

- The bottom edge **(a)** ends abruptly, although this will be covered by a concrete edging (see Fig.01) so can be overlooked
- The other key problem area is the protruding column **(b)** as the bricks run through it without adhering to building laws; however, this will also be rendered so can be also be ignored.

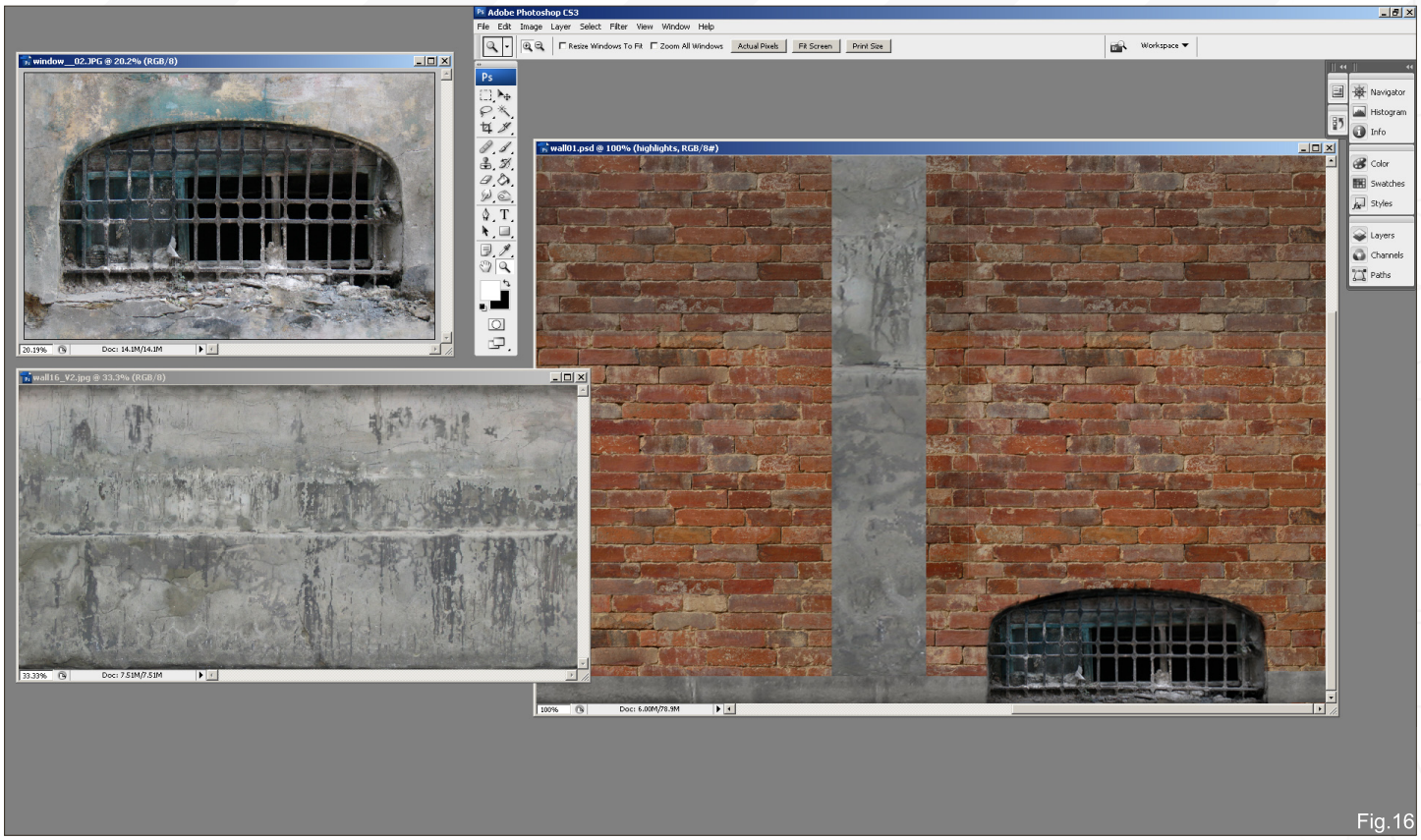


Fig.16


Fig.17

Before fixing any tiling problems I merge in some other references, as these will conceal some of the issues straight away – e.g. a vent that will occupy the near side of the wall. You can see from Fig.01 that the vent is not modeled, nor is the concrete edging in this panel, but it will be interesting to compare the differences between these and the 3D aspects in the final render.

For the concrete I choose “wall16” from the Total Textures Collection V2: R2 – Aged and Stressed DVD, and the vent comes from a forthcoming collection: Total Textures Collection V19 – Destroyed and Damaged (**Fig.16**).

BUILDING AN ARCH

The vent looks OK in the texture, but it does not look fully integrated into the wall. To help this we will use a method common in architecture which is to crown it with a brick arch, similar to **Fig.17**. This is quite a tricky task as we need to make sure the bricks are consistent with those used in our wall, and also conform to the curve of the vent. We could copy and paste an arch into the

template and skew and color correct it, but here is a more effective way…

Create an oblong box in 3D and map some of the bricks onto it, making sure they are vertical, similar to the format in the photo. Once done you should end up with something akin to the top shape in **Fig.18**. Imagine that the black and white shapes represent the bricks. Now create a spline shape that traces your arch (blue line) and then apply a Path Deform. In other words, thread your box along the spline using the parameters to position it correctly. You can now render this out and import it into your file and, once scaled, it will fit neatly around the vent. If you need to alter the shapes a little or taper them, then go back into your 3D package and alter the UV co-ordinates and re-render.

Once done, be sure to clone in some mortar or cracks around them to embed them into the wall, and do not worry about odd shapes or unevenly shaped bricks – just look at **Fig.17**!

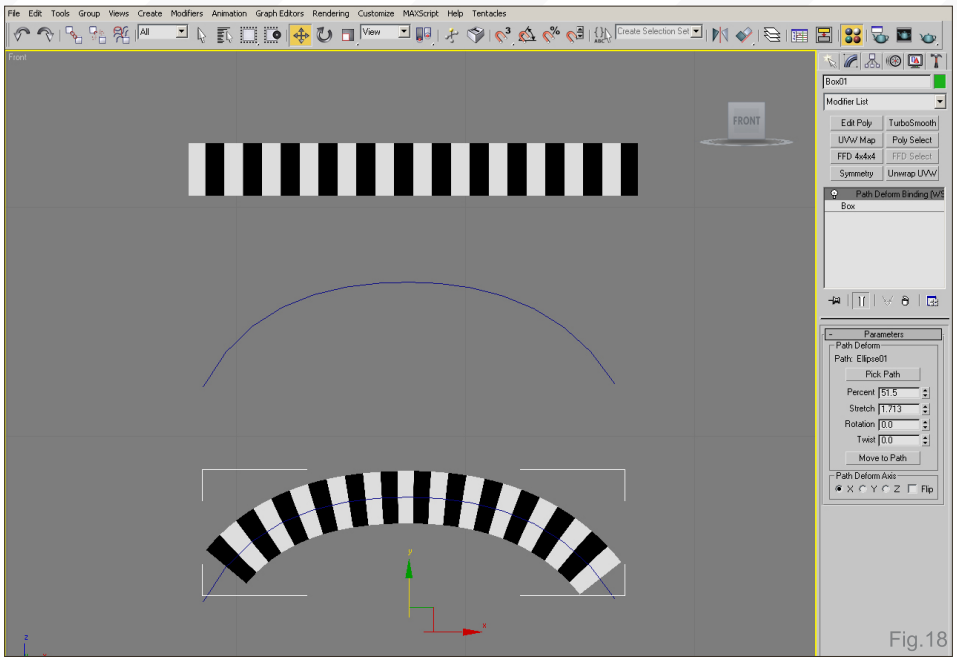


Fig.18

Here is the finished image (**Fig.19**). And this concludes the first part of this tutorial series. Next time we shall continue building detail into the textures and we'll look at the role of bump and specular maps before moving on to adding in dirt and grime, and aging the scene.

RICHARD TILBURY
For more from this artist visit
http://www.richardtilburyart.com/
or contact
rich@3dtotal.com

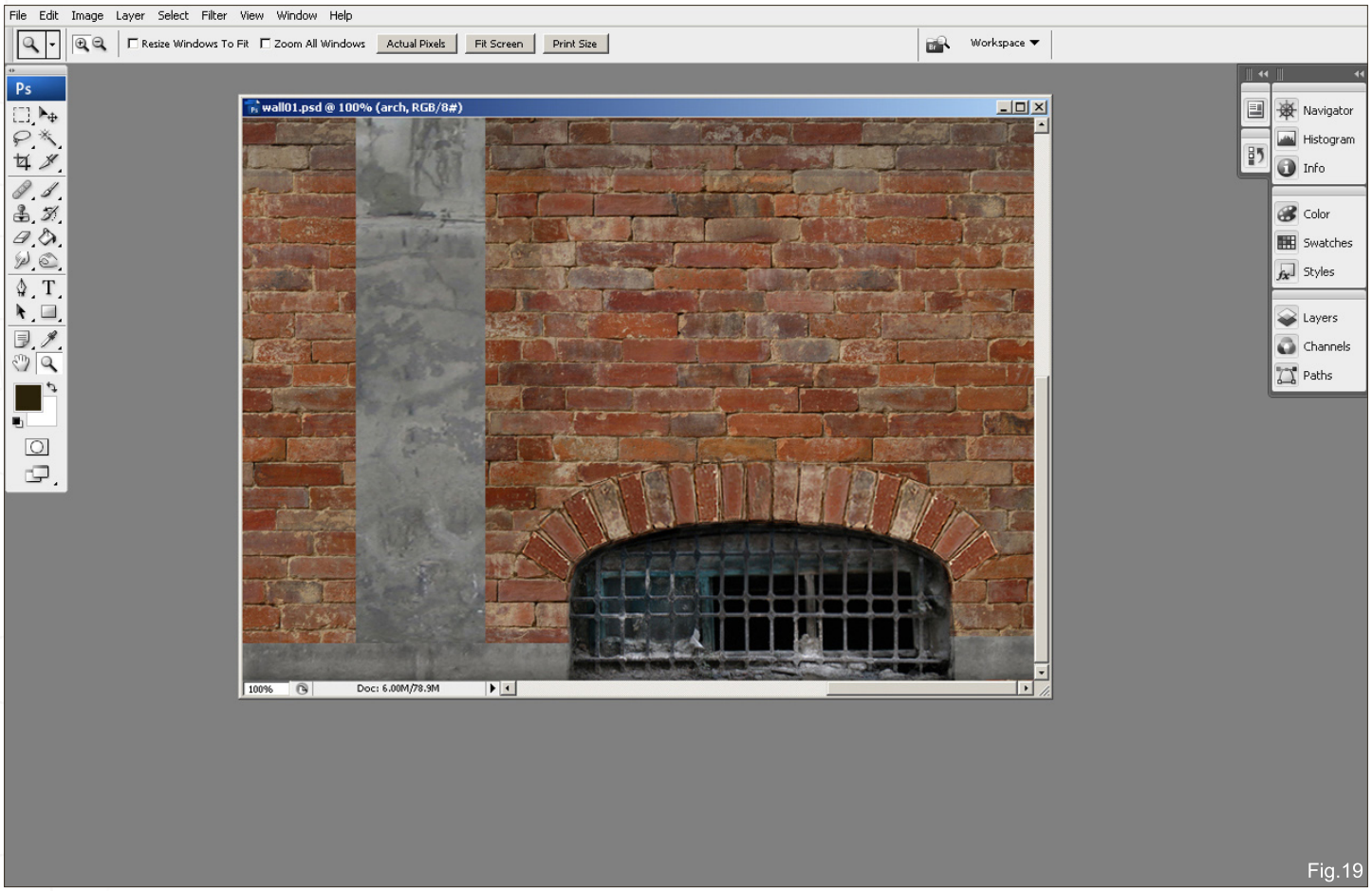


Fig.19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The texture used within this tutorial
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"It's up to each individual artist to figure out how to tweak the V-Ray settings to their liking – it is a powerful tool that is completely in the hands of willing and talented artists to get the best use out of it."

MUSTANG SHELBY 67

MAKING OF BY MARCO AURELIO MAGALHAES DA SILVA

Marco Aurélio Magalhaes da Silva, Brazilian artist and appreciator of the beast of a car that is the Mustang, tells us how he went about modeling and rendering his interpretation of the Shelby 67 – complete with a poly modeling demo and his shader and rendering settings to inform and inspire all those budding car modelers out there!

MAKING OF 'MUSTANG SHELBY 67'

Software Used: Softimage XSI, 3d Studio Max, V-Ray and Photoshop

INTRODUCTION

Hi, my name is Marco Aurélio Magalhaes da Silva and I was born in the state of São Paulo, in Brazil. I am 25 years old, I'm married to Cristina Perrotti Peixoto da Silva, and I have a degree as a mechanic technician that I achieved in Senai, Brazil, where I've had most of my experience with technical drawing. With my experience in the industry I decided to get more into CGI by enrolling on 3D courses where I learned the tools of the trade and, mostly, modeling concepts.

> "…THIS IS THE BEST TECHNIQUE TO CREATE COMPLEX INORGANIC MODELS…"

I would like to dedicate this work to the CGI School, Melies, in São Paulo, where I had the opportunity to study and develop this model. I also would like to thank João Luiz Boldrini, Rodrigo Pauliki, Matheus Braz Polito, Ronaldo Brito and Rafael Ribeiro, who all helped me in some way in my journey – teaching, motivating and working with me.

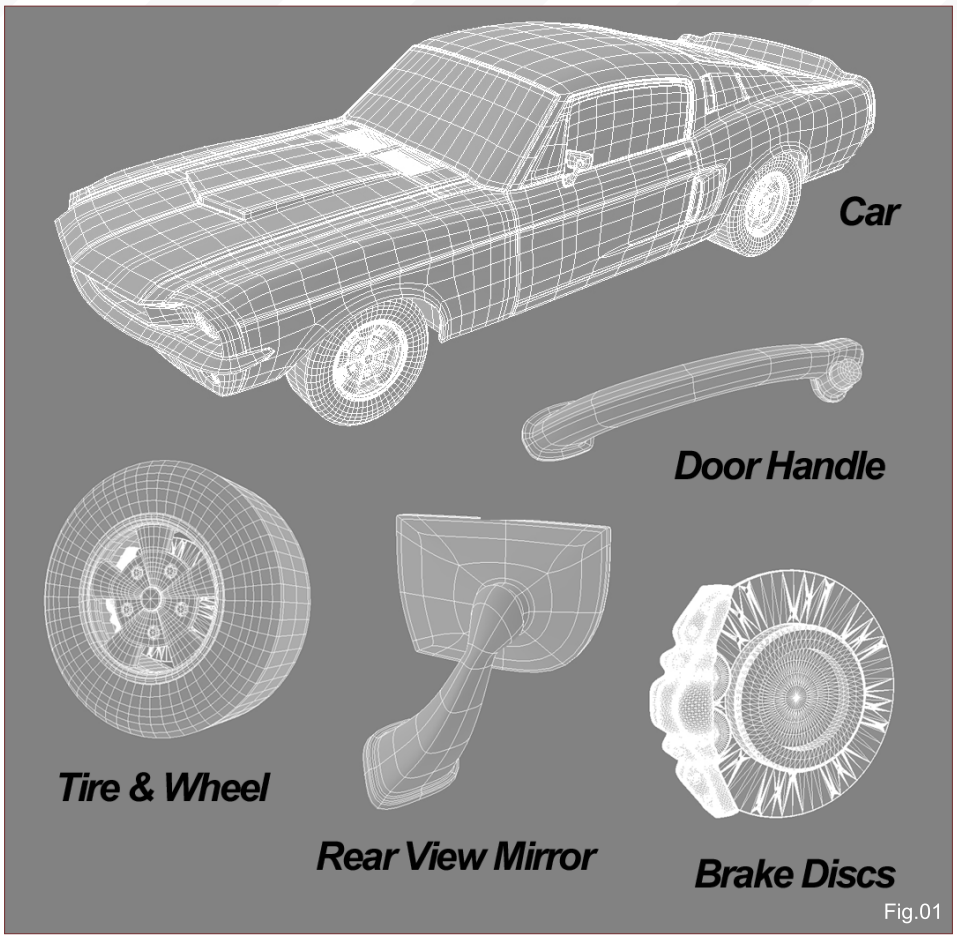

Fig.01

MODELING

This Mustang Shelby 67 is a high-poly model with only one subdivision in the mesh (**Fig.01**).

Modeling with Blueprints

To model this car I employed a popular technique used by modelers to achieve precision, which is poly-by-poly modeling. To me, this is the best technique to create complex inorganic models such as this one. I used a reference image often referred to as a "blueprint" which can be applied to the viewport or in grids within the 3D software. I'll give an example now of how to apply an image to the viewport using 3ds Max 2009:

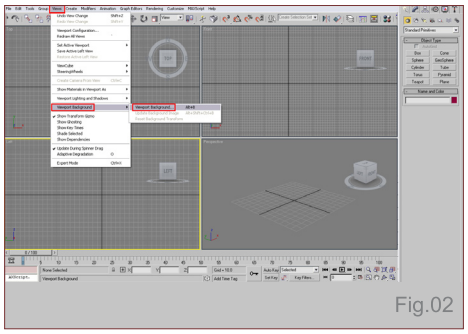
Fig.02

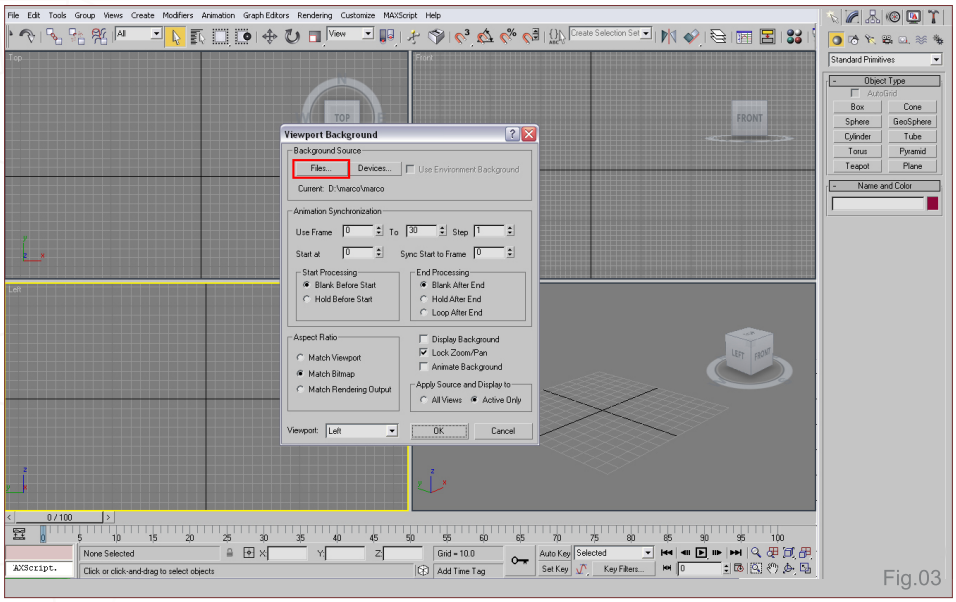

Fig.03

- Select the Viewport in which you want to insert the reference image, in this case I chose the Left viewport. Then, on the top menu, select Views > Viewport Background > Viewport Background (**Fig.02**)

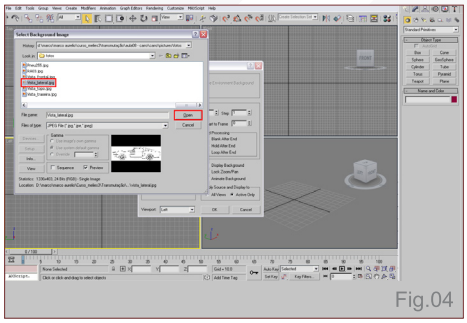
Fig.04

- A window will open where you can choose the image that will be added to the Viewport. Click Files (**Fig.03**)

- A new window will open where you can browse for the desired image – once selected, click Open (**Fig.04**)

- After choosing your image you'll be taken back to the Viewport Background window. Here, you'll have to change a few options to make things easier. In Aspect Ratio, change to Match Bitmap and enable Lock Zoom/ Pan. Close this window by clicking on OK (**Fig.05**)

- The image will show up in the viewport and we can zoom in without getting the image static on the viewport so that it now goes along with the zoom and pan. Notice that the image must match the selected viewport (**Fig.06**)

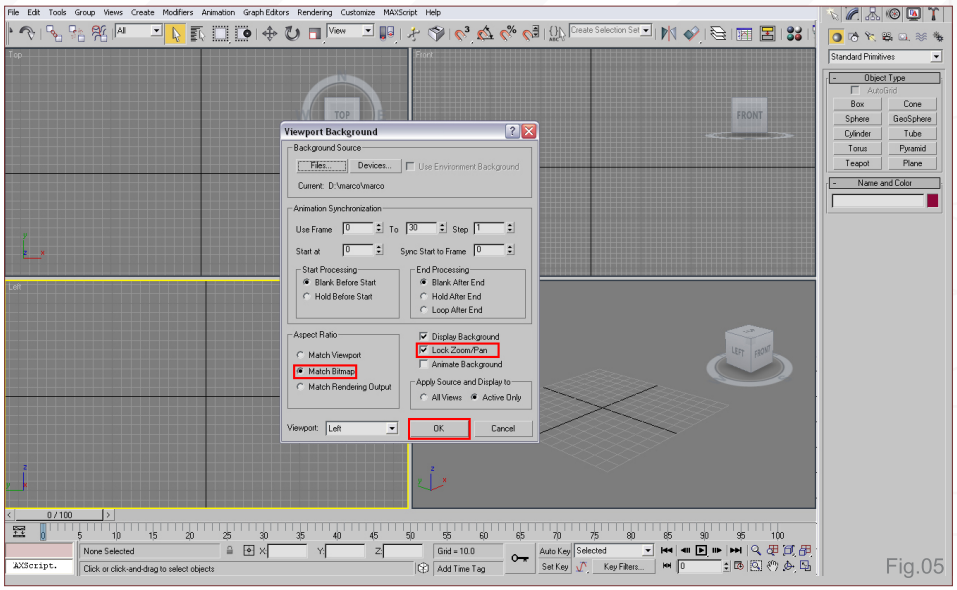

Fig.05

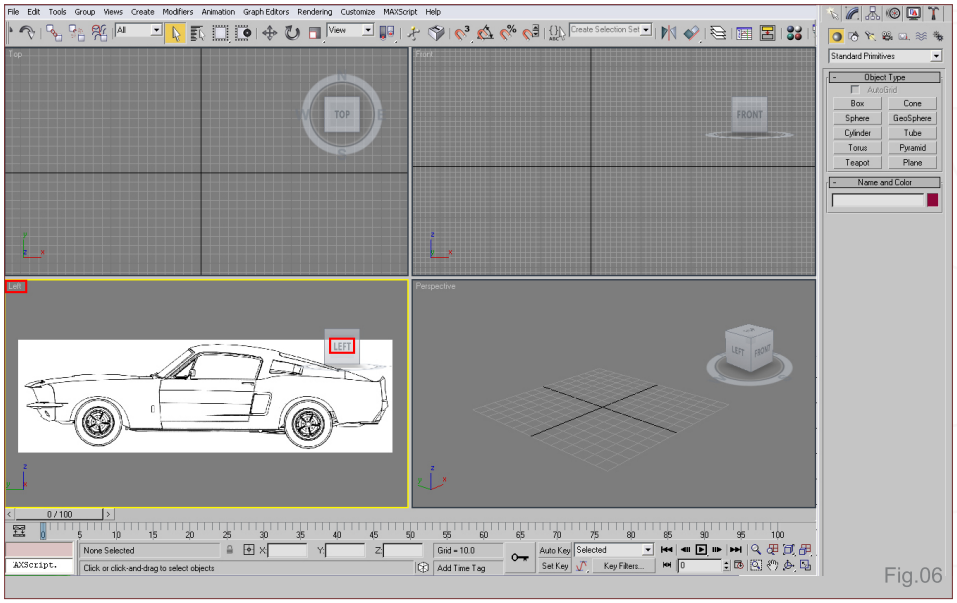
Fig.06

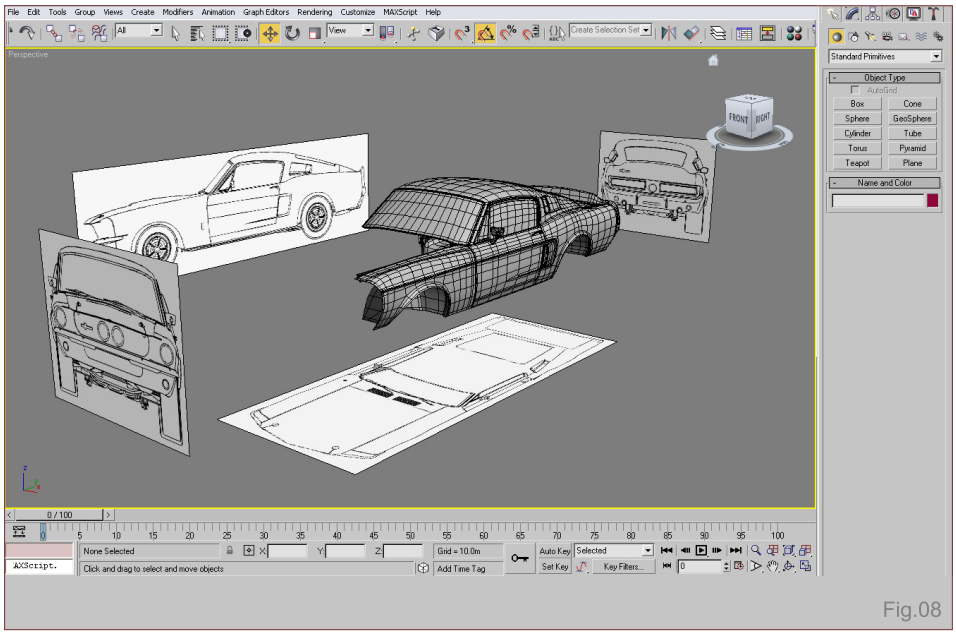
Fig.08

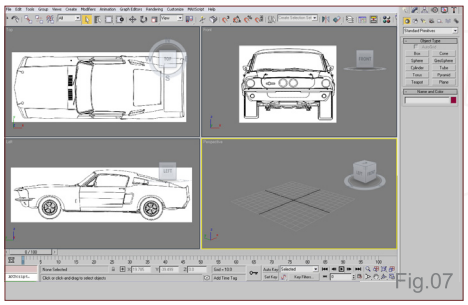
Fig.07

- Right now the image is in the viewport, you should repeat the process for the remaining viewports (**Fig.07**)

Another way to add the images to the viewport is to create four grids in their respective axis. This was the technique I used for this model (**Fig.08**).

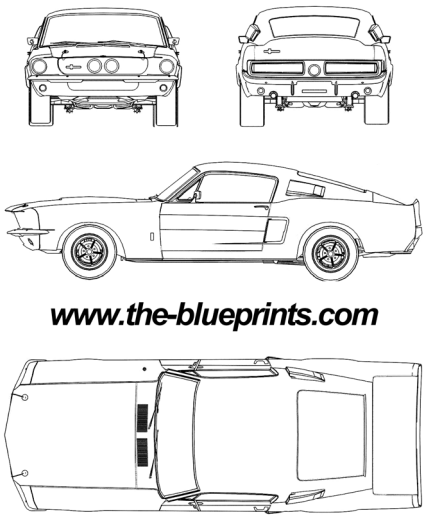

Fig.09

Here is an example of a blueprint used for the modeling of my Mustang Shelby. For realistic inorganic modeling it's imperative to use one of these. Blueprints can be acquired for free at www.the-blueprints.com (**Fig.09**).

"WITHOUT BLUEPRINTS IT IS MUCH HARDER TO ACHIEVE SATISFACTORY RESULTS…"

Modeling Poly-By-Poly

I'll now illustrate a demonstration in 15 steps of how to use the poly-by-poly modeling method. I used a blueprint with four orthogonal views with good image resolution: Top, Front, Left or Right, and Back. Without blueprints it is much harder to achieve satisfactory results (**Fig.10**).

MATERIALS AND TEXTURES

In this project, I used textures that I found on the internet through a Google search. They were free to use and were not taken from stock image sites. I created most of the final textures in Photoshop CS2. I use this older version of the software because it's enough for my needs, and the process is the same for newer versions. The main textures have a resolution of 3000 by 3000 pixels, which gave sharper detail. The bump textures were used to create the feeling of depth in some details of the model. The textures used can be seen in **Fig.11**.

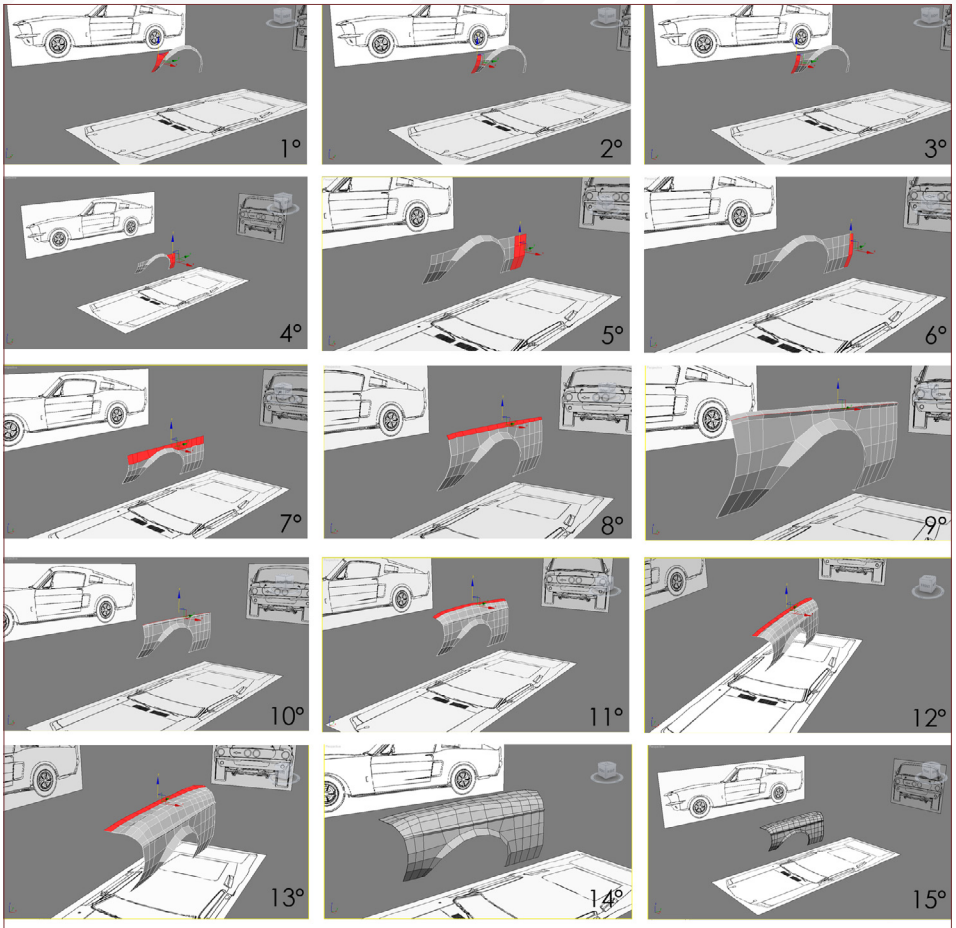

Fig.10

Fig.11

SHADERS AND SETTINGS

For the shaders I used a VRay Material with some adjusted parameters, as shown in **Fig.12** and as follows:

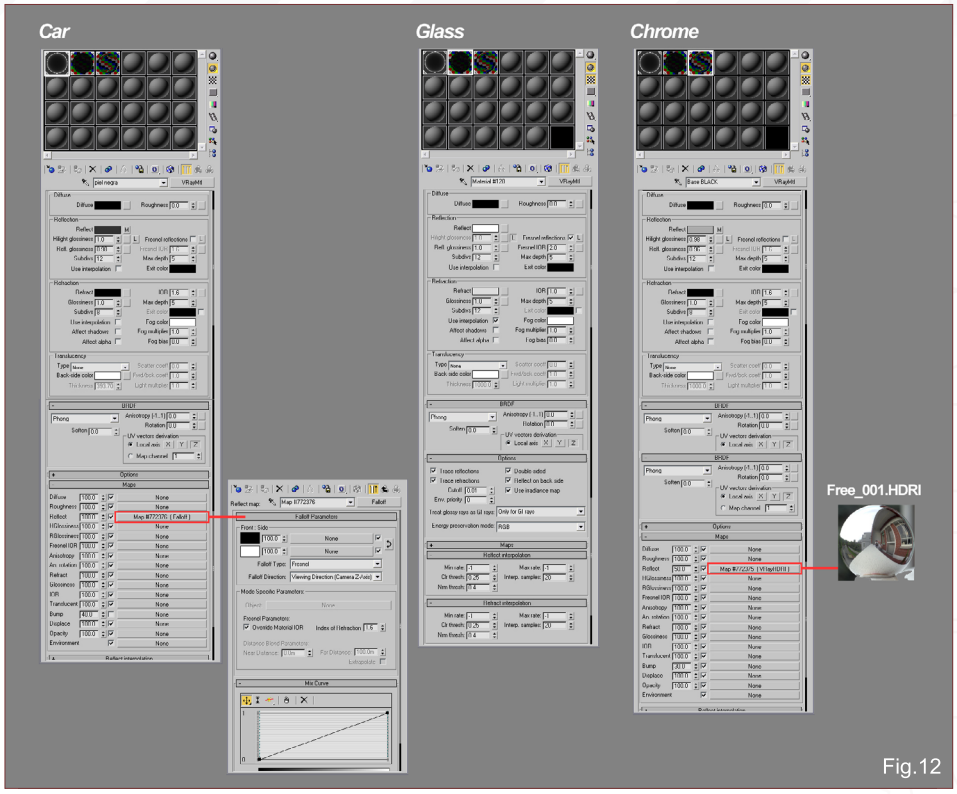

Fig.12

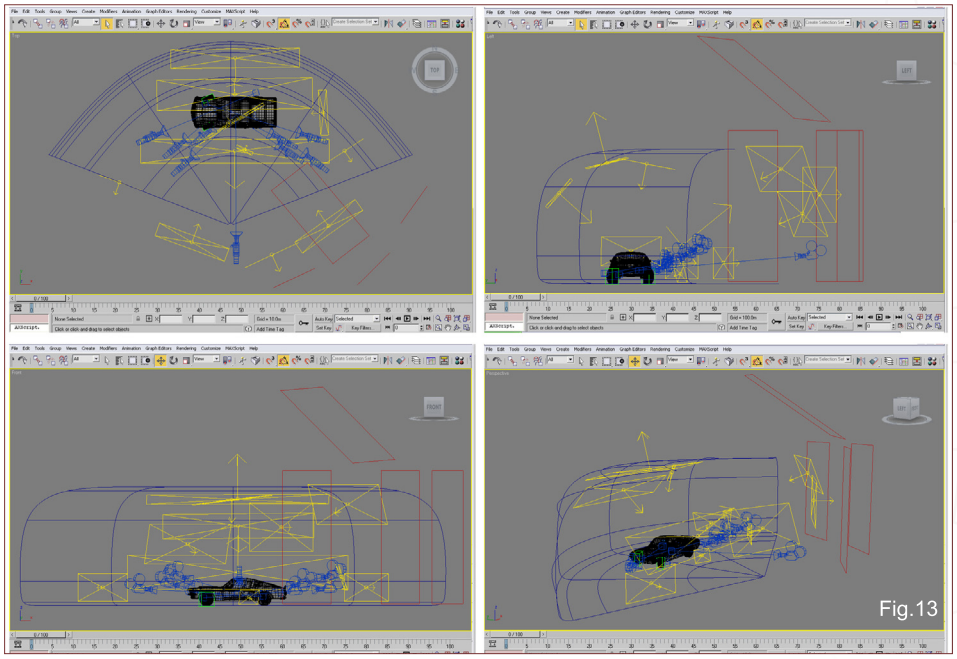
Fig.13

Car Shader

- **Diffuse**

  Diffuse: R: 0, G: 0, B: 0

- **Reflection**

  Reflect: R: 50, G: 50, B: 50 | Falloff: Black and White

  Highlight glossiness: 1.0

  Refl. glossiness: 0.98

  Subdivs: 12

- **Refraction**

  Refract: R: 0, G: 0, B: 0

  Glossiness: 1.0

  Subdivs: 8

  IOR: 1.6

- **BDRF**

  BRDF: Phong

Glass Shader

- **Diffuse**

  Diffuse: R: 0, G: 0, B: 0

- **Reflection**

  Reflect: R: 255, G: 255, B: 255

  Highlight glossiness: 1.0

  Refl. glossiness: 1.0

  Subdivs: 12

  Fresnel reflections: Enabled

  Fresnel IOR: 2.0

- **Refraction**

  Refraction: R: 220, G: 200, B: 200

  Glossiness: 1.0

  Subdivs: 12

  Use interpolation: Enabled

  IOR: 1.0

- **BRDF**

  BRDF: Phong

- **Options**

  Reflect on back side: Enabled

Chrome Shader

- **Diffuse**

  Diffuse: R: 0, G: 0, B: 0

- **Reflection**

  Reflection: R: 171, G: 171, B: 171

  Highlight glossiness: 0.98

  Refl. glossiness: 0.96

  Subdivs: 12

- **Refraction**

  Refraction: R: 0, G: 0, B: 0

  Glossiness: 1.0

  Subdivs: 8

  IOR: 1.6

- **BRDF**

  BRDF: Phong

LIGHTING

This scene is fairly complex in terms of lighting. There are 11 VRay lights, all with Multiply values of less than 20 units. Only four of the VRay lights were projected directly onto the car, while the other seven were turned to face other directions to create blurred reflections and diffuse shadows. This is a very important technique when working with this type of lighting, so that the lights won't be overexposed. I also used four vertical white planes and an extra plane just slightly above them to create the reflection on the body of the car, just as if it were in a photo studio. I used one third of a smoothed sphere to create the impression of an infinite background, with 100% white color (**Fig.13**).

Even before rendering with custom shaders, it's important to setup and render test just the lighting of the scene, without applying any kind of shaders. This speeds up your work process and is more efficient because the yield is much lighter, and in this case the only concern is whether the lighting works as what you intended or not (**Fig.14 – 15**).


Fig.14

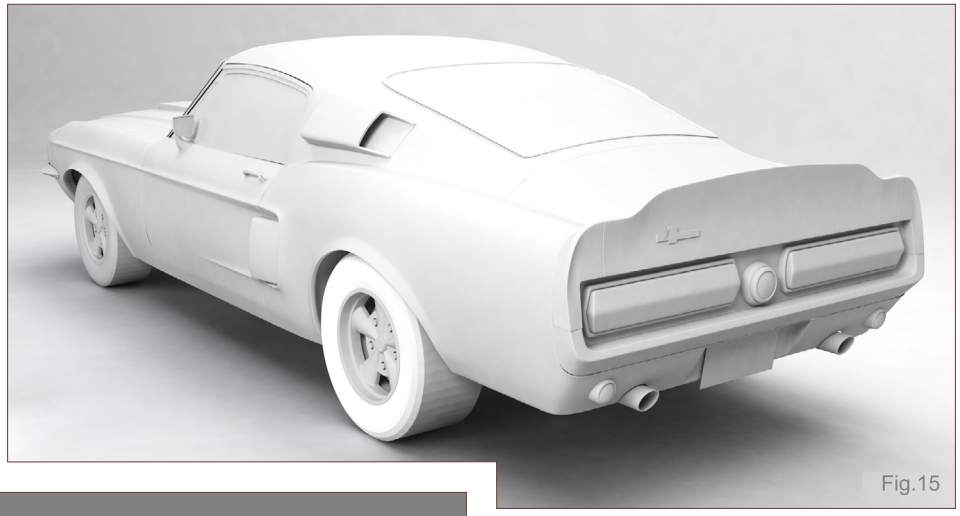
Fig.15

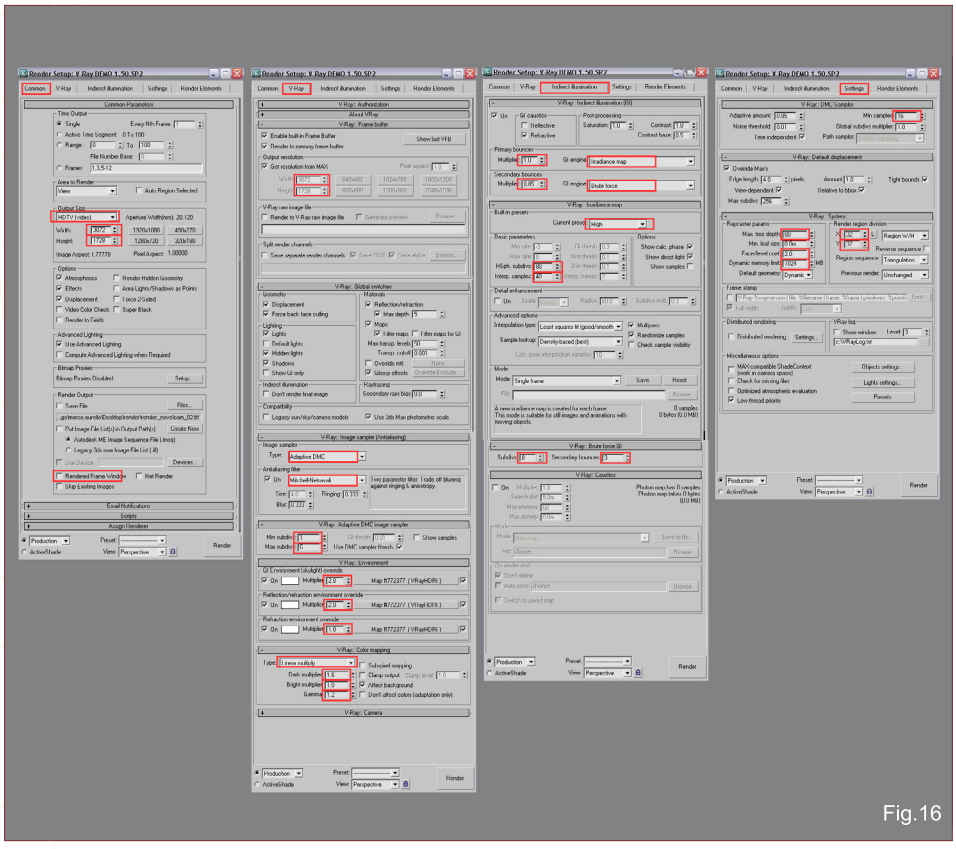
Fig.16

"…IT'S IMPORTANT TO SETUP AND RENDER TEST JUST THE LIGHTING OF THE SCENE…"

RENDERING WITH V-RAY

Using V-Ray to render, I used settings that made an interesting combination. These parameters are not set rules but more of a study and personal preference of my own. If you want to try it out for yourself, I suggest you start off with the following parameters and then tweak them to your liking (**Fig.16**).

After adjusting the V-Ray parameters, I achieved the result shown in **Fig.17 – 21**. These all have a resolution of 3072 by 1728 pixels. For these five images I didn't use any extra render passes, such as Shadow, Ambient Occlusion, Specular, etc.


Fig.17

Composition

I decided to take the Mustang out of the studio and get him on the road – after all, that's where such a beauty should be! First of all, I rendered the image with the same settings as before – which did not work too well, as you can see (**Fig.22**). So I created an Ambient Occlusion pass (AO) to reinforce the corners and the spaces between elements (**Fig.23**). I took these two images into Photoshop, and with some adjustments of the brightness, contrast, layer blending mode and so on, I finally got a pleasing result (**Fig.24**).


Fig.20


Fig.18


Fig.19

Conclusion

I hope that with this simple "making of" I have been able to answer some questions about this type of render. It's up to each individual artist to figure out how to tweak the V-Ray settings to their liking – it is a powerful tool that is

Fig.21

completely in the hands of willing and talented artists to get the best use out of it.

I would like to thank 3DCreative magazine for this opportunity to discuss a little about my work and experience with 3D. Please feel free to send any questions and/or comments to by email, or through my blog. Thanks for reading!

MARCO AURELIO MAGALHAES DA SILVA

For more from this artist visit
http://www.maurelio3.blogspot.com
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Fig.22


Fig.23


Fig.24

Digital Art Masters
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With the release of 3DTotal's latest book, *Digital Art Masters: Volume 4*, we have some exclusive chapters for you...

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This month we feature:

"Thom Yorke"
by Andrew Hickinbottom

Thom Yorke Caricature

By Andrew Hickinbottom

Software Used: 3d Studio Max, Mental Ray and Photoshop

Introduction

A creative and humorous forum (which I am a member of) holds fun weekly Photoshop challenges based upon current events/celebrities/ spoofs and so on. One week it was "Photoshop Thom Yorke". I thought I'd have a go in 3D, as I've always admired and wanted to try caricature art. Also keeping in with the "quick and dirty" spirit of the forum, I wanted to try and create it as quickly as I could.

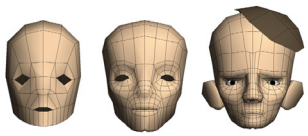


Fig.01

After collecting reference photos of Thom Yorke (Radiohead's lead singer), as well as painted caricatures of him by different artists and references of caricatures in general, I began. I thought I would try to make a moodier, richer image than my usual bright, simplified, cartoony style. The image challenge on the forum changes every week, so I had a definite time window in which to do it – I couldn't afford to fine tune and obsess about all the little details like I normally would on a personal project.

Workflow

Starting off with a box, I split it in half and used the symmetry modifier to speed things up. By using the connect tool to add edgeloops, the cut tool to add edges where needed, and good old fashioned vertex moving, I made the cube into a very simplified head shape, with the beginnings of the edgeloop structure for the mouth and eyes, as well as establishing a jaw line (**Fig.01** shows the initial modeling process). It's always important to get these fundamental things right early on as they can make adding detail a real pain if done wrong!

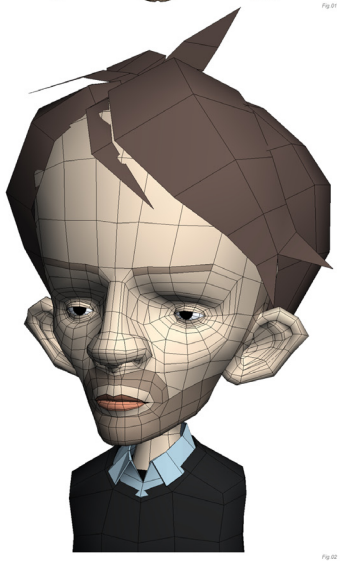


Fig.02

Using the same techniques, I continued to develop the head, adding detail and curvature. I had no definitive picture in mind for what this should look like. I nearly always design things as I model them because I get frustrated when trying to draw my ideas. I find it more productive to gradually alter and tweak the model until it looks right and matches the design in your head.

I made a start on the ears and hair and added basic eyes. It's best to roughly block out the main areas of your model as you go – I find it much easier to see it take shape this way. Continuing with the detailing, I spent a while establishing the size, position and shape of the

The following shots of the "Thom Yorke" book pages are featured here in full-resolution and can be read by zooming in...

defining features. Looking at caricature art in general helps to see what features are amplified or made smaller, whilst maintaining a likeness.

The polygons forming his stubble, brows and lips were colored to help visualize the end result. His body was blocked out from a box and an extruded plane with the shell modifier used to form his collar. I "grew" the hair using several edge extrusions of a plane and lots of vertex adjustments (**Fig.02** shows further modeling progression).

I added meshsmooth, completed his hair, then projected and unwrapped the UVs. The face texture is a Photoshop jigsaw of various parts of a high-res photo of Thom, combined with painted and cloned areas. The hair is simply blurred noise with the motion blur filter applied (**Fig.03** shows the head texture map and UV guides).

Due to the bright, simple and cartoony nature of much of my work, I have never really experimented with Mental Ray or final gathering. Given the short turnaround of

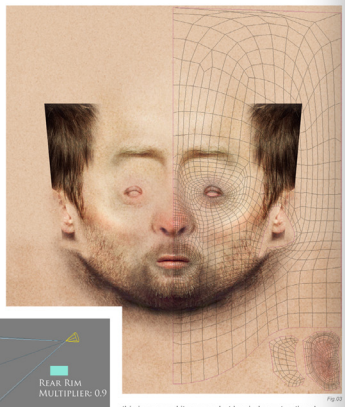


Fig.03

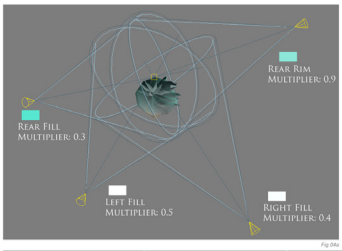


Fig.04a

this image and its somewhat hurried construction, I thought I would do a quick experiment with Mental Ray's features as a small learning exercise. I added an SSS fast skin material for the subsurface scattering effect, and applied the texture and bump map. The lighting setup was relatively simple: four spot lights surrounding the model were adjusted to balance the light and dark areas on Thom's face. **Fig.04a** shows the position, color and intensity of the lights in the scene. It helped to isolate each light and see its effects on the scene before combining them. **Fig.04b** shows the light each of

Fig.04b

the four spot lights produced when isolated. After much fine-tuning of the light settings and materials, I experimented with final gathering to bounce the light around in a more convincing way. A subtle three-step gradient material was added to the background. (**Fig.05a – b** shows the head shader with and without the textures.)

Next, I completed detailing and texturing on his body. Once completely satisfied with the look of the textured symmetrical face, I collapsed the modifier stack and worked on the asymmetry, such as his lazy eye, and skewing his jaw, ear and mouth a bit. Asymmetry makes a much more interesting caricature, and Thom has a few asymmetrical features – mainly his distinctive lazy eye.

Fig.05b

Fig.05a

I thought that the image was still looking a little too smooth, and the textured stubble sourced from the photo of Thom looked too flat. I added some hair to his face using Max's hair & fur tool. Using the styling tools and growth options, as well as a mask map to control coverage, I created his stubble and eyebrows. I tend to find procedurally generated hair doesn't "sit" on finished renders too well, so once happy with the look the hair was converted to geometry for ease of rendering. (**Fig 06a** shows the final unsubdivided model with the asymmetrical features; **Fig.06b** shows the final untextured model with asymmetrical features; **Fig.06c** shows its wireframe.)

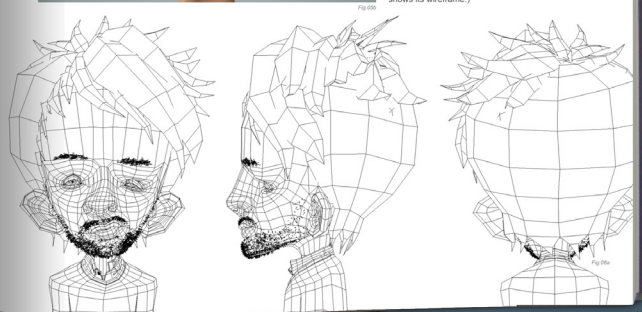
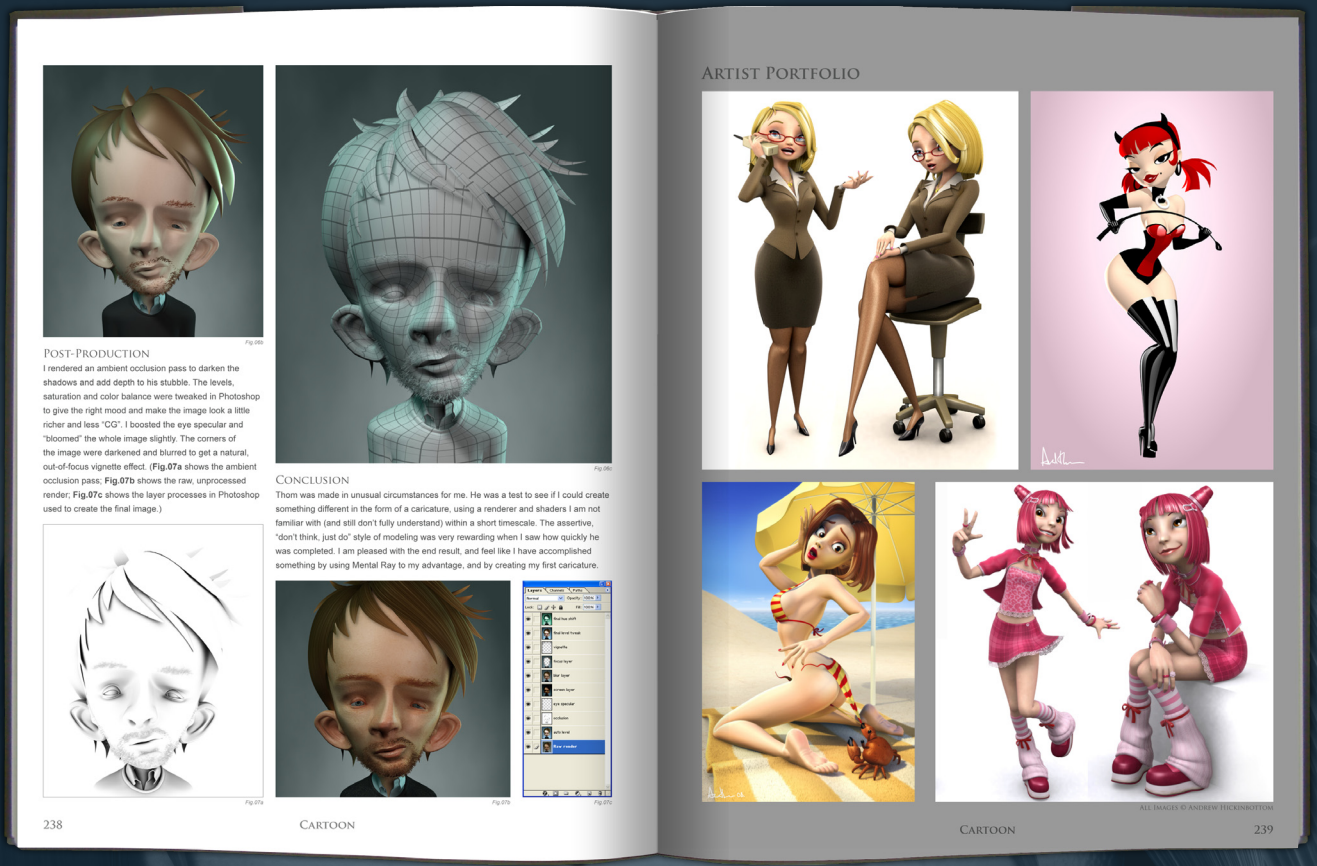


Fig.06a



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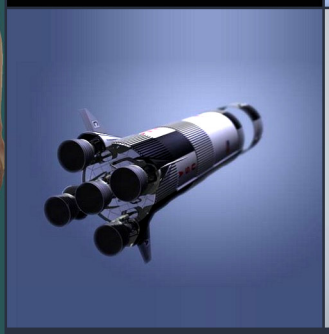


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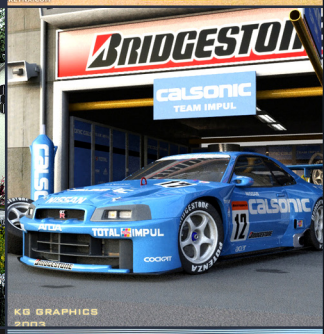



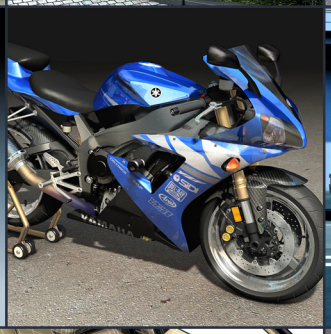
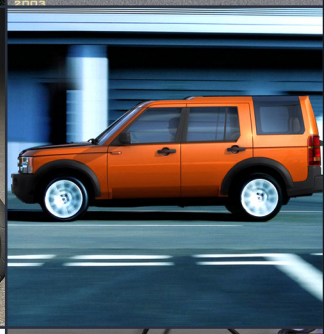

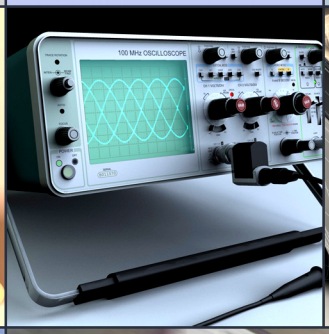




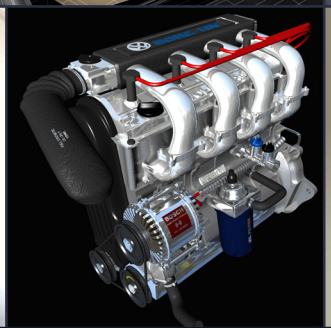


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3DC

next month

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Tutorials
ZBrush 'Manimal' Creation Series:
Part 4 - Amphibian Man

Next Gen Character Creation Series
for ZBrush, 3dsmax, Lightwave, Maya, Modo

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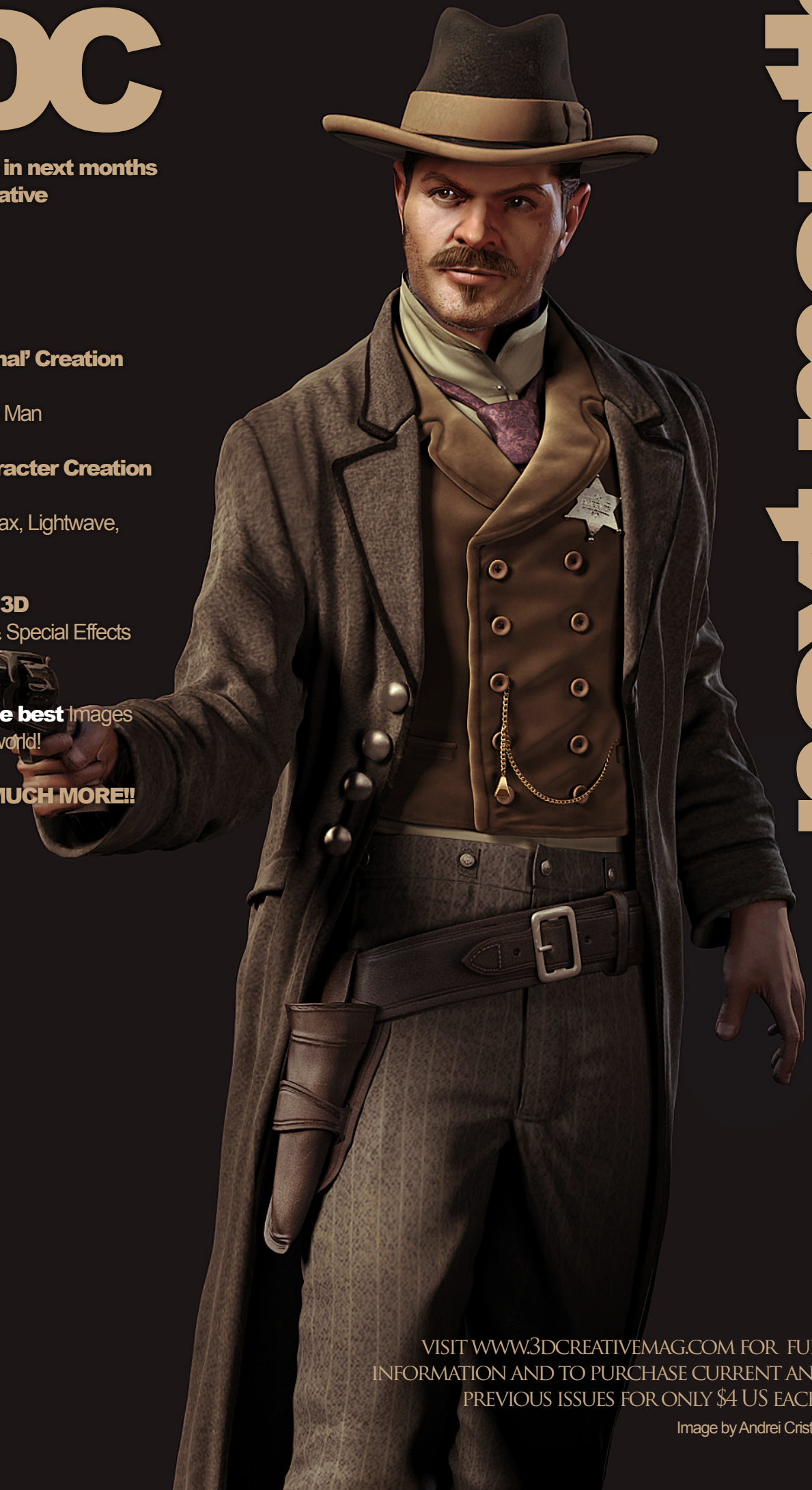

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ZBrush

NEXT GEN CHARACTER CREATION SERIES

This series of tutorials provides a comprehensive guide through the process of creating a 3D character intended for use within a next gen console environment. As such, the design of the model will be tailored towards the eventual aim of functioning within a game engine and viewed in real-time. The series will cover all of the key stages of the 3D pipeline from sculpting the initial mesh in ZBrush and optimizing it in the principal 3D packages, through to texturing and applying next gen shaders. The inclusion of ZBrush tutorials will address the methods of sculpting both a low-poly mesh as well as a highly detailed version used to generate a normal map, and accompany the remaining software specific chapters that will detail topics that cover mapping, materials, lighting and rendering.

CHAPTER 1 – LOW POLY MODELLING | JUL 09

CHAPTER 2 – HIGH-POLY MODELLING PART 1

Chapters 2 and 3 are ZBrush specific chapters that cover the methods used to sculpt a detailed and high-poly mesh from the low-poly version. The value of subdivision alongside the key tools and brushes used in the process will form an integral part of the tutorial. It begins by importing the optimised mesh back into ZBrush in readiness for a methodical approach to refining each of the limbs and body parts.

CHAPTER 3 – HIGH-POLY MODELLING PART 2 | SEP 09

CHAPTER 4 – MAPPING / UNWRAPPING | OCT 09

CHAPTER 5 – NORMAL MAPPING – TEXTURING | NOV 09

CHAPTER 6 – MATERIALS, LIGHTING & RENDERING | DEC 09

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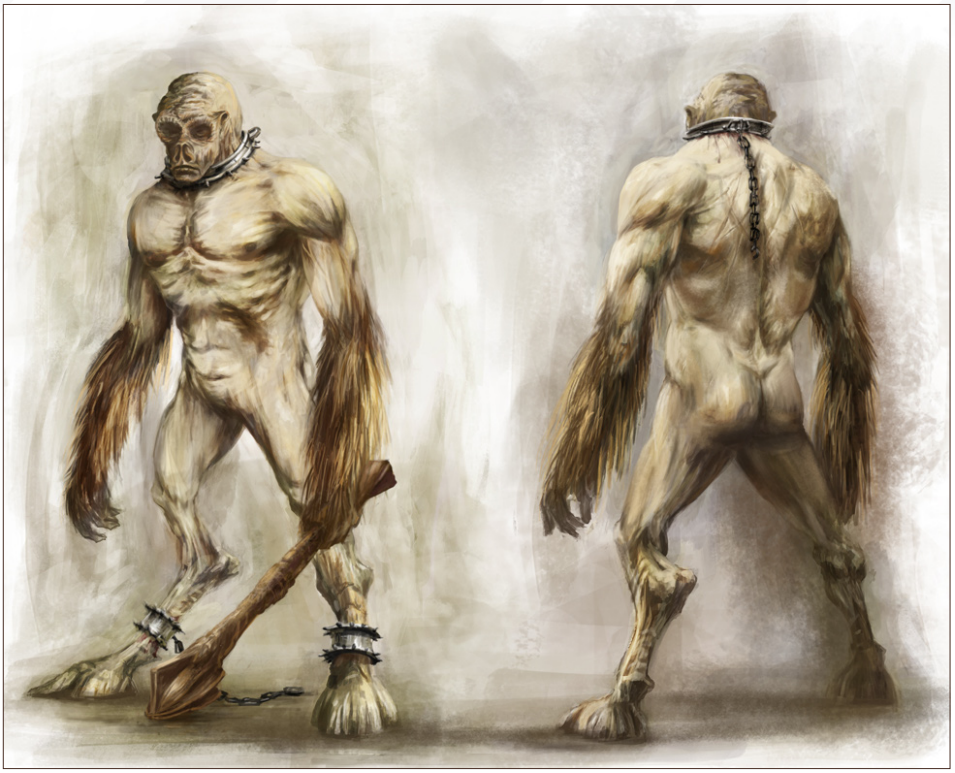
CHAPTER 2 - HIGH-POLY MODELLING PART 1

Software Used: ZBrush



1. This month we will dive into sculpting our high poly mesh in ZBrush. In our previous parts, we created a base mesh in ZBrush and then took it into 3ds Max/Maya/LightWave/modo to be remodelled (**Fig.01**). The emphasis was on good edge flow, topology, and animatability. This will really help us out during the sculpting phase. Bad topology, uneven polygons, and poor construction can make our job very difficult during the sculpting phase, creating pinches and overly dense areas of mesh. Think of a wood sculptor. Wood has a certain grain to it, and there is a noticeable difference between sculpting against the grain and carving along with it. In the same way, if our topology roughly follows our musculature it makes it a lot easier to produce a clean model.

We are going to start by opening our base mesh in ZBrush, so go ahead and export it from 3ds Max/Maya/LightWave/modo using the Obj exporter on default settings.

Note for 3ds Max users: There are a number of settings added to the 3ds Max exporter in Max 2008, which can complicate things somewhat and can be confusing. The default settings work well for any version previous to this, but if you are running 2008+ then choose the Maya option from the dropdown list of presets. If ZBrush or Mudbox is selected, the model seems to change and has a different vertex order. This is not a problem for this initial export, but later when we want to subtly adjust our base level model and re-import it, ZBrush will refuse a model with a different vertex order, even if the poly count is the same.*

Note for Maya users: You will need to enable your Obj exporting options, if you haven't done so already, by going to Window > Preferences > Plugin Manager > Objexport, and check Load/Auto Load. Once this is loaded, exporting is fairly straightforward. Click either of the Export (Options) boxes under File, and make sure that all of the options are checked on.

Note for LightWave users: LightWave is much simpler than other packages in the sense that it doesn't have any vertex re-ordering export settings; it's simply just an Export OBJ option.

Note for modo users: We are going to start by opening our base mesh in ZBrush, so from modo's top File menu, select Save As or Export As, and select Wavefront OBJ (.obj) from the drop down list. Then click Save when the Confirmation request comes up.

In ZBrush, click on the Tool > Import button, and navigate to where your saved base mesh is located. The model will not appear on the canvas yet, as we have just imported it into the Tool palette. We now need to drag and release the model onto the canvas and make it editable (shortcut key Q). The next step is to open the Tool > Geometry palette, and click on Divide a few times. I have chosen to divide the model 4 times and would advise 3 or 4 divisions as optimal. Too high a division and it can be problematic when moving large areas around, too low and we don't have enough polygons to start blocking out our anatomy.

When there are too many divisions initially, adding detail too early becomes very tempting. Detail should ideally be left to the last pass once the forms and anatomy are perfected. Again, it's useful to think of it as a wood carving. If you add detail to the carving early on you commit yourself to the forms and shapes of the sculpture at that point in time. This is very limiting and leads to models looking visibly inaccurate. Of course, this is digital work, thus we have a lot more freedom to modify our model even after detail is applied, but the same principles apply and are useful to an optimum workflow. Getting caught up in detail is a beginner mistake, but one that with a little patience can be overcome and better results can therefore be produced.

We need to make sure our camera is in perspective view, by clicking the Persp button inside of the Draw menu. You can adjust this number to around 45 for an optimal field of view, but feel free to modify it to something that feels

comfortable. Just be aware that the lower the number the less perspective your model will have, and sculpting without perspective can lead to creating a model that looks very different once we take it into our 3D application later, or render it.

Now our model is divided, we should import two spheres to be used as eyeballs. You can skip this step, but I find that it is a huge benefit to actually have spheres in the eye sockets, so we can sculpt the eyelids around the spheres without so much guesswork. Open up 3ds Max/ Maya/LightWave/modo and open your last base mesh scene. Create a sphere in one of the eye sockets and place it correctly. For a human, the width of the temple should be about five eye widths wide. I estimate this character would have five-and-a-half to six eye widths. Make sure to compensate for the effect smoothing will have on the eyeballs, as it will shrink them somewhat. It's useful to apply a Turbosmooth now and scale the eyeballs to fit the sockets. Now we apply a symmetry modifier to the eyeball mesh, and set the axes to 0, 0, 0. Export this mesh as an Obj using the same export settings as before.

Back in ZBrush, click on the ZSphere icon in the Tool palette. This switches the active tool to a neutral one and we are ready to import our created eyes model. Again click Tool > Import and choose the newly exported eye Obj. Look over to the Tool palette. You will see a bunch of models, of which one of them will be the divided base mesh model we are sculpting with. Click that one and the model will appear again on your canvas, editable. The models don't disappear once you switch tools, they simply get stored inside of the tool palette ready for later use.

Expand the Tools > Subtools palette and look for the Append button. Think of a model in ZBrush – a ZTL – as a group. That group is split into several models, each being a SubTool of the main tool. We can edit each of these SubTools individually, in place. We will append in our eye model as a SubTool by clicking the Append button and then clicking the eye mesh that should be near the top of the popup window. The eyes then are added to the tool and we can select, move and edit them as we wish.

This would be a good time to start creating some custom brushes in ZBrush, you can do this by opening the brush menu and docking it to the side toolbar by pressing the little circle in the top left of the menu. Alter the settings here of a particular brush, give it a name, and if you like an icon. Then save it. Good settings to modify are Gravity, which drags the geometry down as you sculpt (this is great for cloth), and BrushMod, which pinches the geometry together as you sculpt (this is great for wrinkles).

Since I've already worked out the silhouette of my model, there is not much remodelling to do in regards to the shape and proportions. I can go directly to blocking out the muscle groups that will be most prominent in the model. The interesting thing about modelling for games is that we have to be aware of the distance at which the model will be viewed. If the game is a

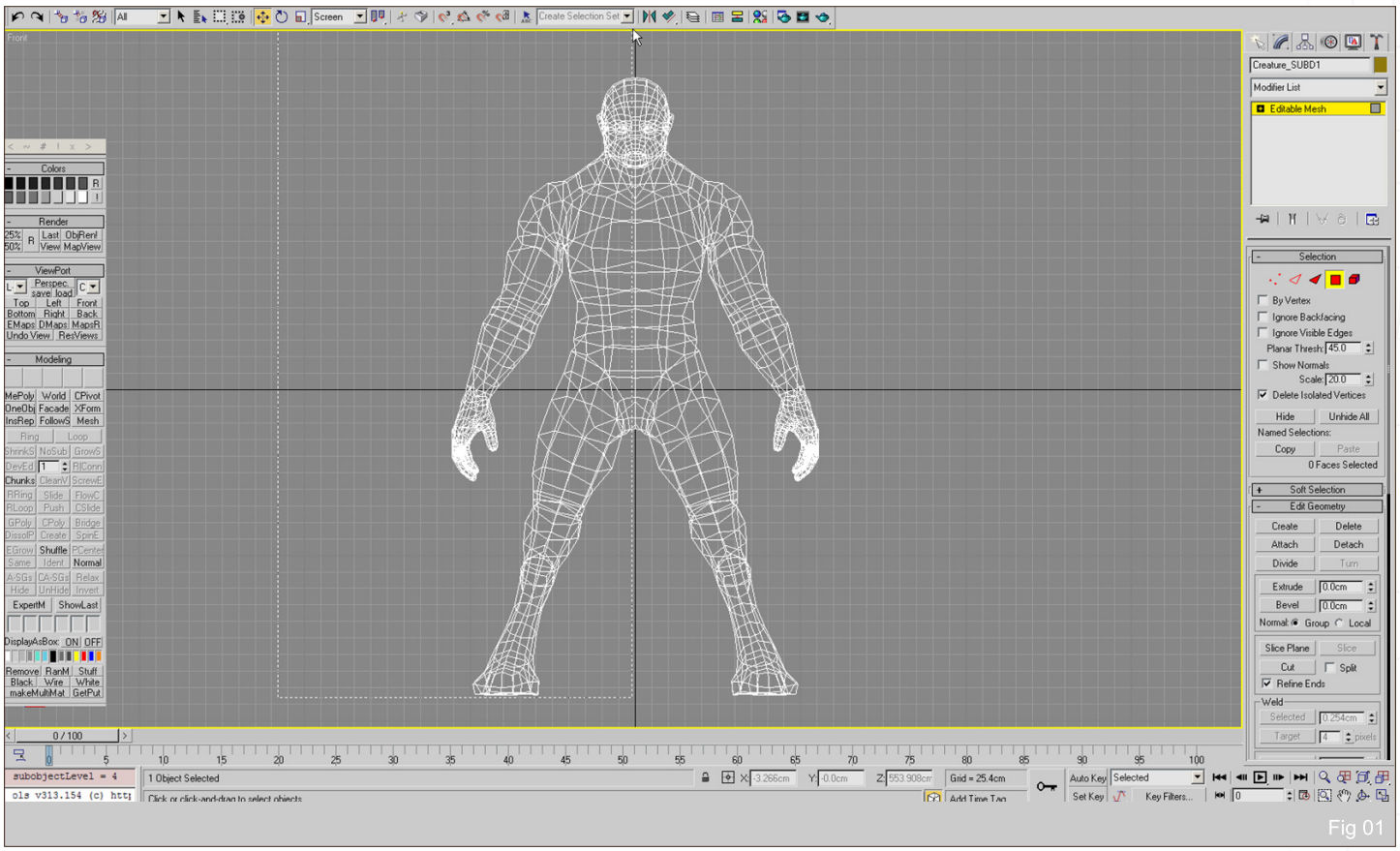


Fig 01

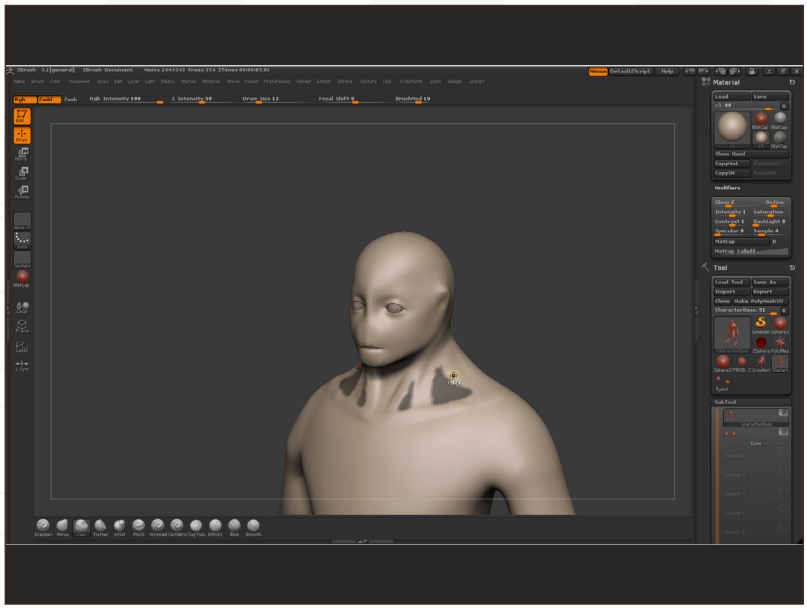


Fig 02

first person shooter you may view the characters up very close, whereas a third person game you may never see the character close enough to see skin pores or small scars. This kind of consideration can affect how we model the character and how we paint our textures. I'm going to decide that this is a character for a role-playing fantasy game, and therefore will be viewed both from a distance and up close. It's therefore important to have enough detail in the face to withstand close-ups, and have muscles still pop out to maintain the character's personality and look from a distance.

2. A good way to quickly block out forms is with the masking tool. Choose a brush like Standard or Clay and hold down Ctrl. Then simply paint the areas of indentation onto the model's neck (**Fig.02**).

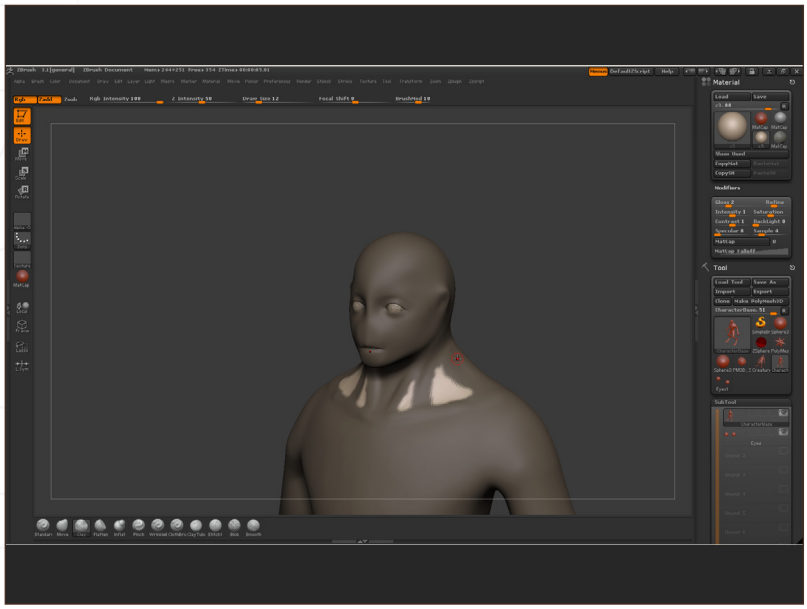


Fig 03

3. Invert the mask by holding down Ctrl and clicking in an area of space outside of the model (**Fig.03**).

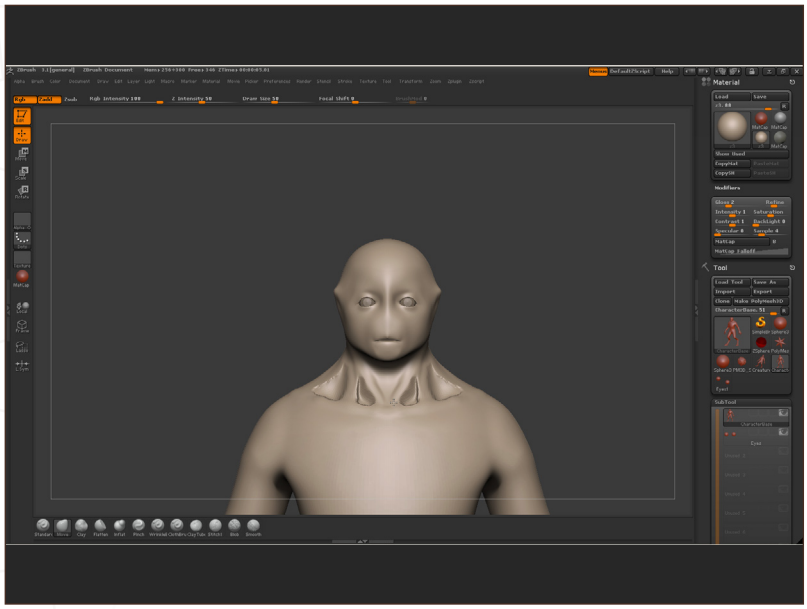
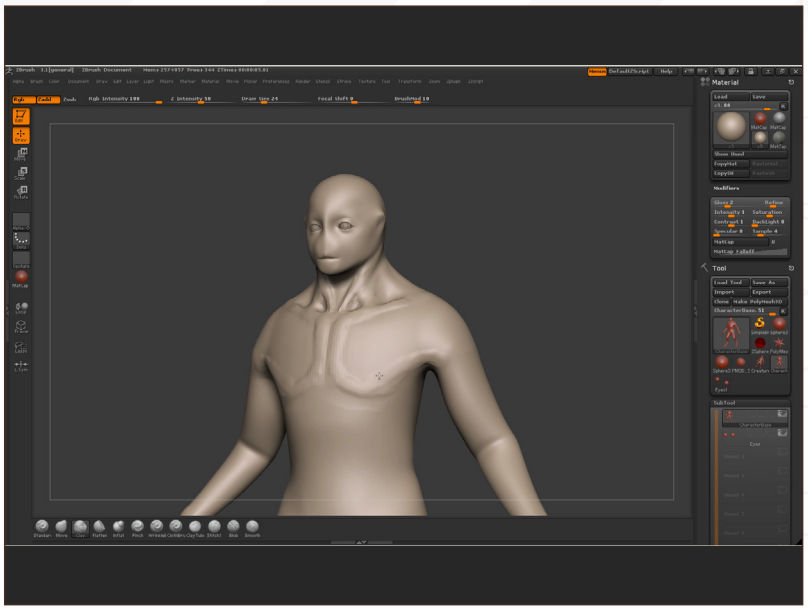


Fig 04

4. Switch to the Move brush and pull the area that is unmasked inwards. Now we have a quick and dirty neck sculpted. We can then unmask by holding down Ctrl and dragging and releasing in an area of space (**Fig.04**).

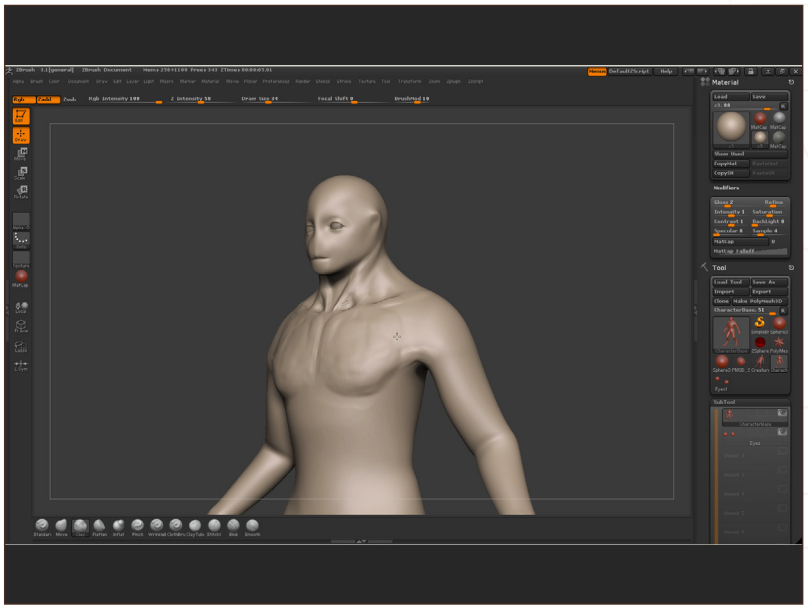
5. Smooth the model by holding down Shift and, with a Standard brush, painting over our neck. Go on then to work the forms of the neck more, using a combination of the Clay and Standard brushes to bring out the neck muscles. As this is a strong, muscular character, the neck muscles will be very pronounced. Remember this masking technique throughout the process, as it can be applied to numerous areas. Any muscle groups can be painted and inflated; areas between toes and fingers can be quickly pulled in or out and fingernails can be created using masking, as well as many others.

Fig 05a



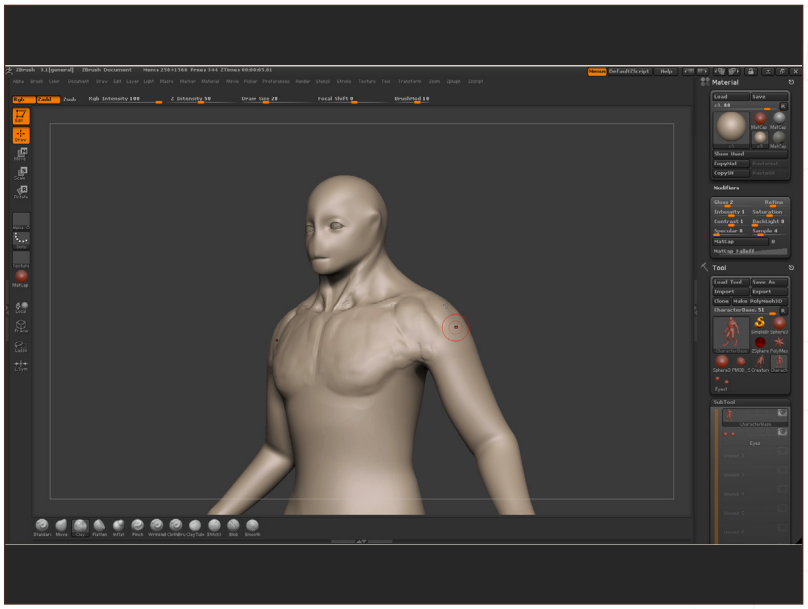
Moving onto the chest now, I'm using the Clay Tubes brush to outline the pectoral muscles. The Clay Tubes brush is my personal favourite brush to use at this stage of a character. It quickly adds layers of extruded geometry in the same way one could apply layers of clay and then smooth it with your thumb or a tool (**Fig.05a – 05b**).

Fig 05b



6. To sculpt the shoulders, I first block in the shoulder muscles. Here it's important to use as much reference material as possible. Even though our character is a fantasy fawn type, he still closely resembles human and animal anatomy that we can research and pull information from to increase the believability and realism of our work.

Fig 06



Add some volume to the chest and shoulder muscles now by using the Clay Tubes brush and smoothing, or by using the Clay brush. The Clay brush is very similar to the Clay Tubes brush except it smoothes as well as adds volume due to the alpha it uses. It's also an option here to use the Inflat brush, which can be a great brush to increase the size of muscles whilst retaining the sharpness of the insertion points and muscle crossovers, something which Clay Tubes does not do as well (**Fig.06**).

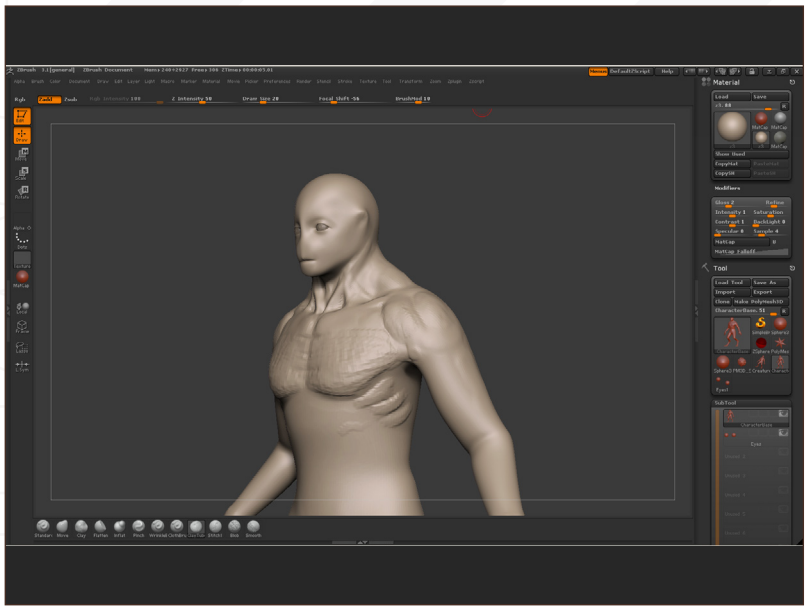


Fig 07

7. Now let's start to block in the ribcage. Using the Clay Tubes brush, again draw in the three ribs that will be visible through the skin. I also refine the neck and shoulder muscles at this point to make sure everything is in balance (**Fig.07**).

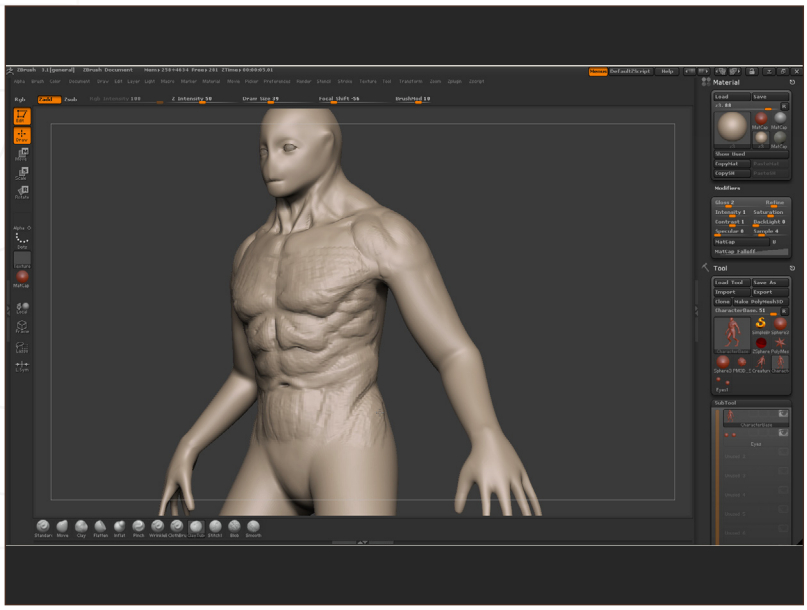


Fig 08

8. In the same way, draw in the abdominal muscles, including the belly button and hips. The belly button can be used to measure proportions, so even if we will end up removing it for fantasy characters it's good to include it for now (**Fig.08**).

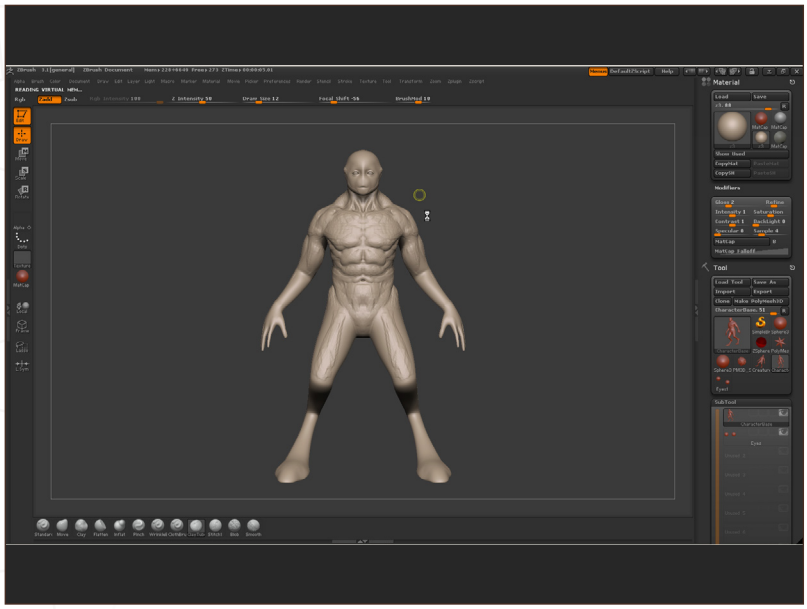
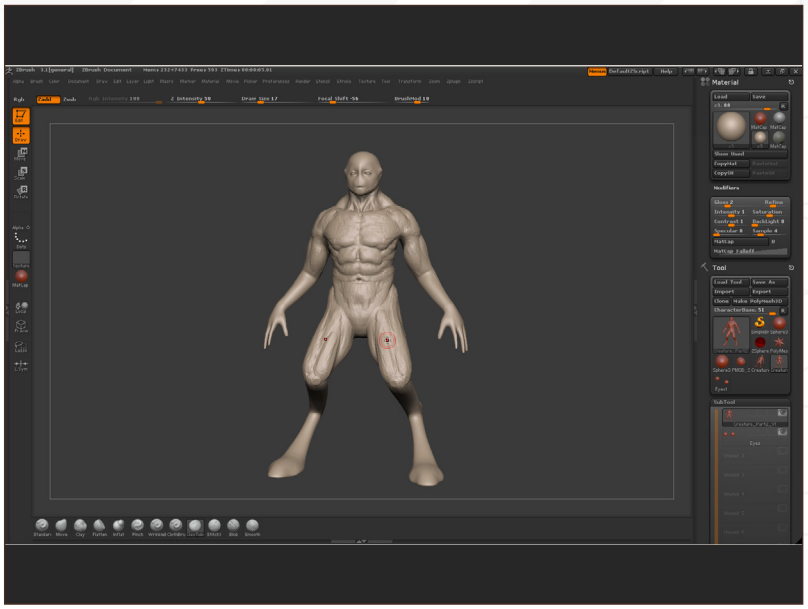


Fig.09a

9. The legs are a large feature of our character, and the thigh and knee muscles will stick out considerably, so block those in now (**Fig.09a – 09b**).

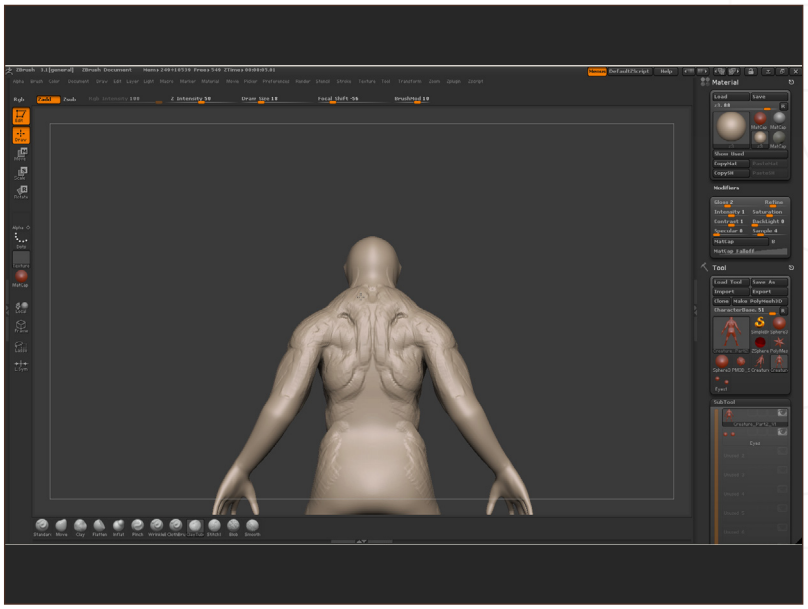
It's probably a good time to save your work if you have not already. Unfortunately, ZBrush does not come out of the box with an auto save option, so I highly recommend setting a timer or saving every 5 minutes, as we often have those snap moments when we do something unexpected or calculated that improves the model considerably. It would be a real shame to risk losing those changes, so be sure to save often.

Fig 09b



10. Let's move onto the back of our character. It's a good idea to take sculpting in stages, starting with the basic proportions of the model and then moving through detail levels from larger to micro.

Fig 10



I'm moving onto the back to keep the whole model at an even level, and also because having the anatomy of the back done will help work out locations of muscles on the sides. Paint in the major muscles of the back, trying if you can to start with the ones closest to the bones. That way, when you sculpt the muscles just underneath the skin, they will easily sit over the top of the previous sculpts and overlap just as they do in real life. It's a lot easier if you can prepare the muscles in this way, working inside to out as opposed to sculpting the overlaps and cross insertions later on (**Fig.10**).

11. Sculpt the muscles of the lower back down to the first knee joint in the same way, again using reference if you can. Using reference to model has gotten a bad rap in recent years, and in some communities it can be seen as a negative thing, but the great modellers and sculptors all use plenty of reference in their work, and it really shows through. Only once you've sculpted many, many hands can you confidently sculpt one without reference. It takes time to build up that information in your head so don't feel bad for using reference material, it can only improve your work at this point (**Fig.11**).

Fig 11

Fig 12a

12. We can move onto the head of our character now, so open up the concept art (**Fig.12a**) and take a look at how the head is constructed. We have quite a strong jaw and large owl-like eye sockets that are ringed by large protruding bone. Let's block out those eye sockets now, using the same techniques as before. Ctrl + Shift and drag around the area of the model to isolate. We might not have enough polygons at this point to sculpt the amount of detail we want into the head. Go ahead and hit Ctrl + D to subdivide the model another two times. I have not gone above 6 subdivision levels in total as I felt this was plenty at this stage (**Fig.12b**).

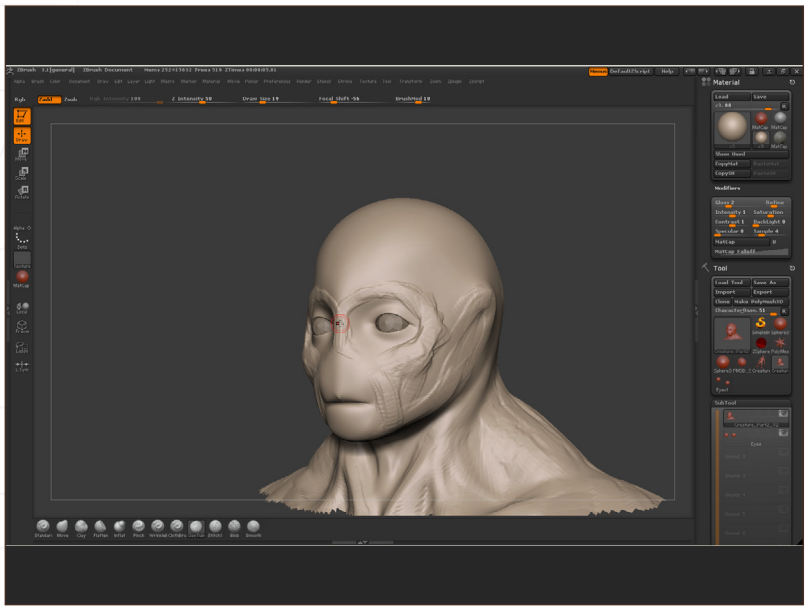


Fig 12b

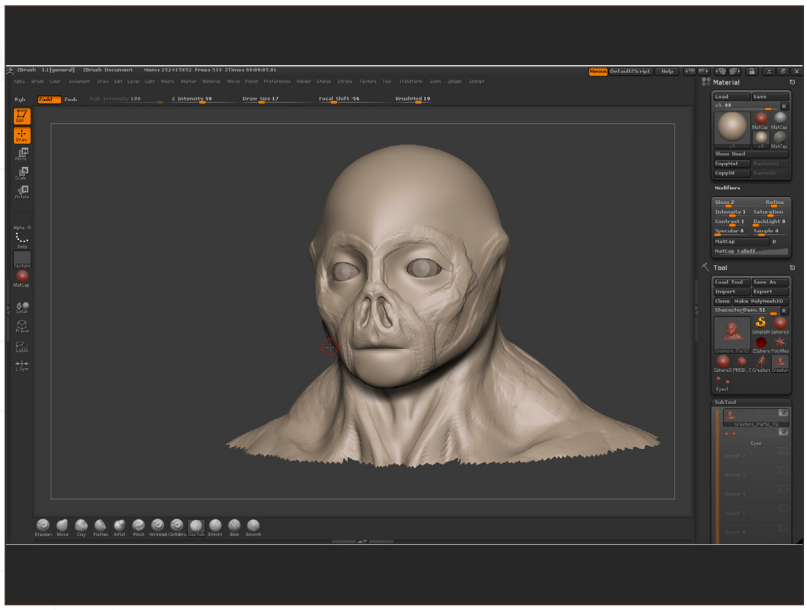
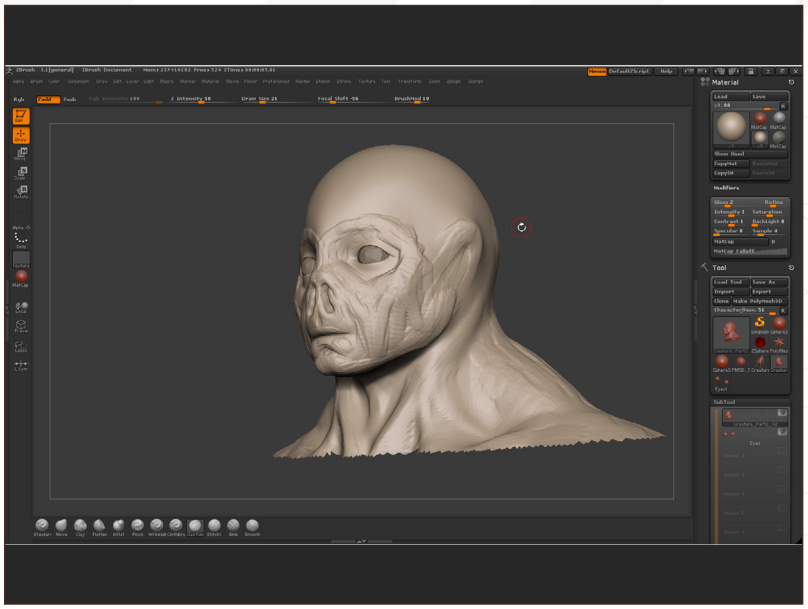


Fig 13

13. Sculpt in the nostrils using the Standard brush, as this brush cuts into the model deeper and faster than the Clay Tubes brush. You could also use the masking technique we used earlier in the tutorial to similar effect. Note that the nostril is not simply a peanut-shaped hole; it overlaps on the outside edge, making it a little more interesting and unique (**Fig.13**).

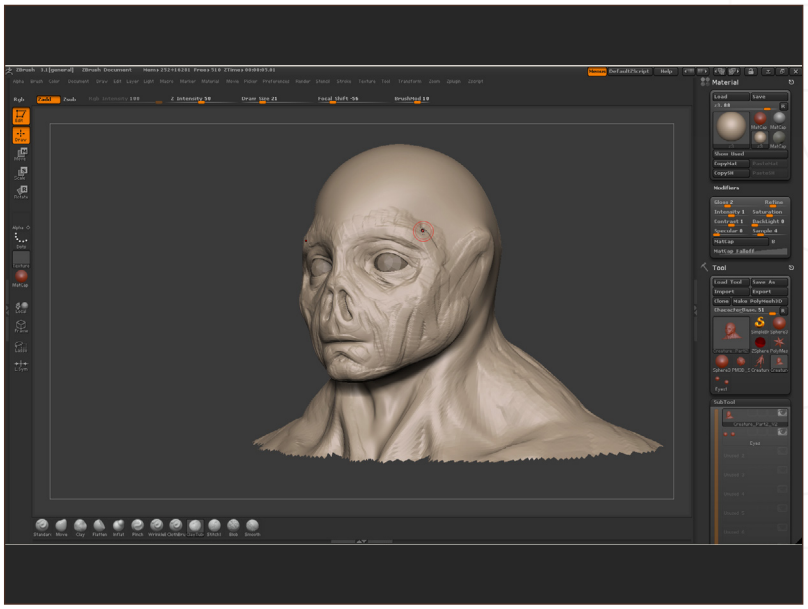
14. Define the cheekbone by imagining a line running vertically from the outside edge of the eye downwards. Now imagine a horizontal line made by the bottom of the nose. The furthest protruding point of the cheekbone should be where these two lines intersect. Sculpt vertical lines down from that point towards the jaw and also block in the jaw line. I take this opportunity to also add the muscles underneath the lips and the chin (**Fig.14**).

Fig 14



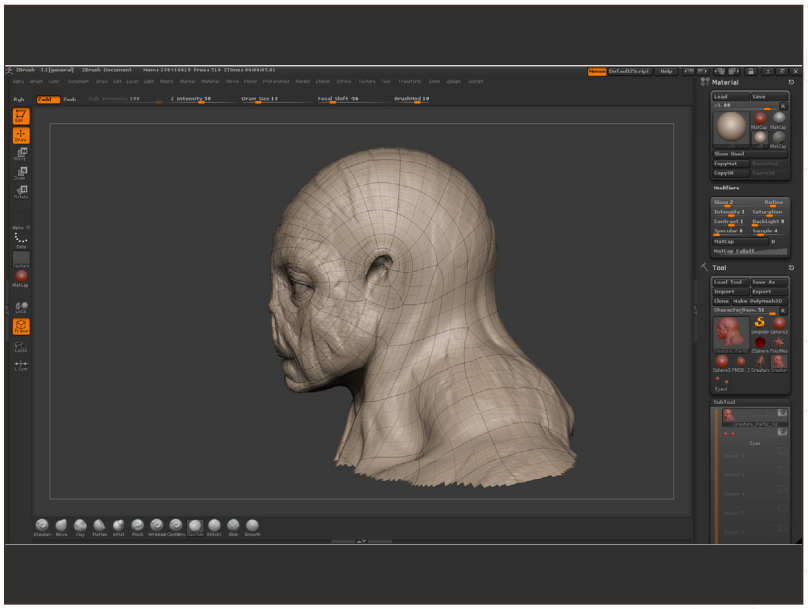
15. Increase the size of the brow now, and start to block in the upper and lower eyelids. After we have the eyelids, cheekbones, and brow in place, we can start to see the shape of the eye sockets. Be sure to change your angle of view often, as the model is a 3D object and not a 2D painting – we have to make sure we don't fall into the trap of overworking an area without changing view. The camera and our mind can play tricks on us, and if we are not aware of this we can quickly end up with a model that looks great from certain angles and terrible from others. Combat this by simply changing the view very often, and always checking your work from different angles and view distances (**Fig.15**).

Fig 15



16. Press Shift + F to display the wireframe of the model on the surface. Sometimes it's useful to display this so you can be sure you are sculpting along the topology you've created, and not against it. Sculpt in the ear cavity here making sure the top of the ear follows the curve of the wireframe (**Fig.16**).

Fig 16



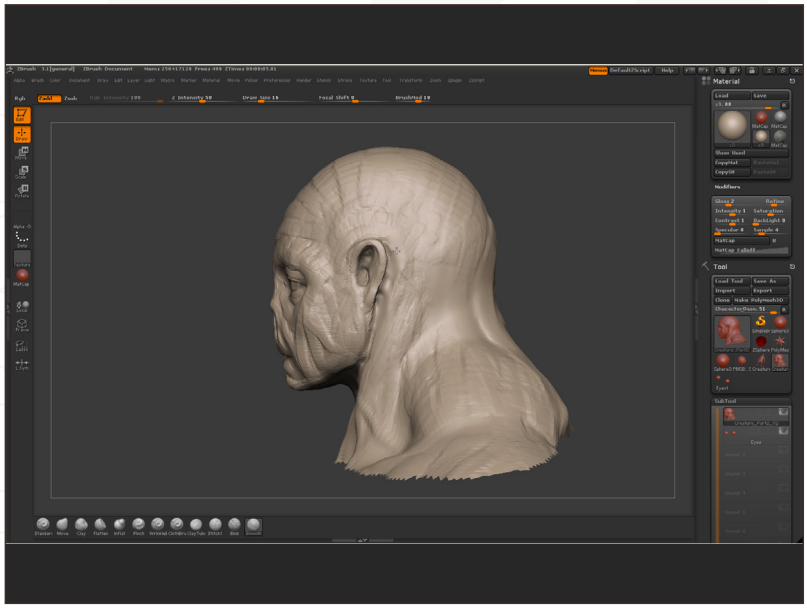


Fig 17

17. Sculpt behind the ear and cut into the model to shape the back of the jawbone. Use this opportunity to also shape the neck muscle further (**Fig.17**).

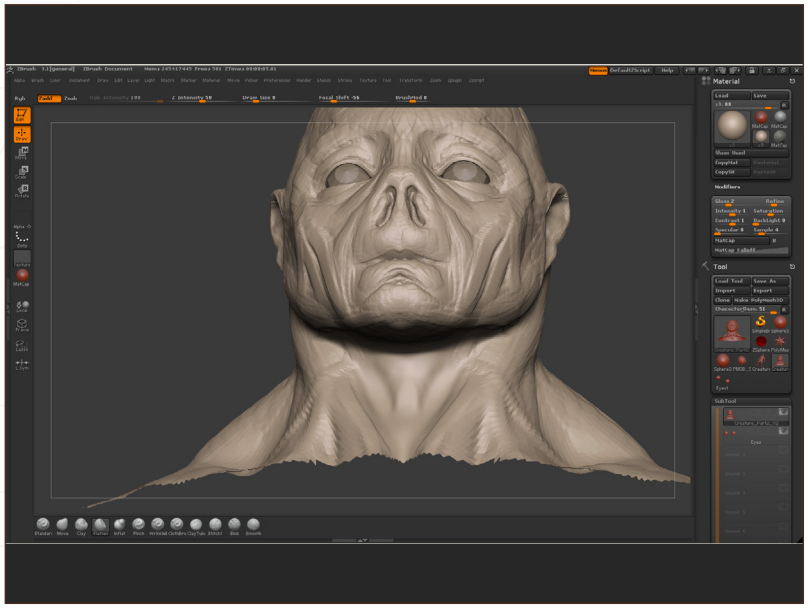


Fig 18

18. Refine the nostrils and add volume to the upper lip. As the character is somewhat ape-like, I increase this area quite substantially to give him an overbite and have the upper lip tuck into the mouth. You may find using the Pinch brush here helps to define the edges of the lips. You can see the facial muscles and forms coming together at this point, and the character already looks fleshy and anatomically correct (**Fig.18**).

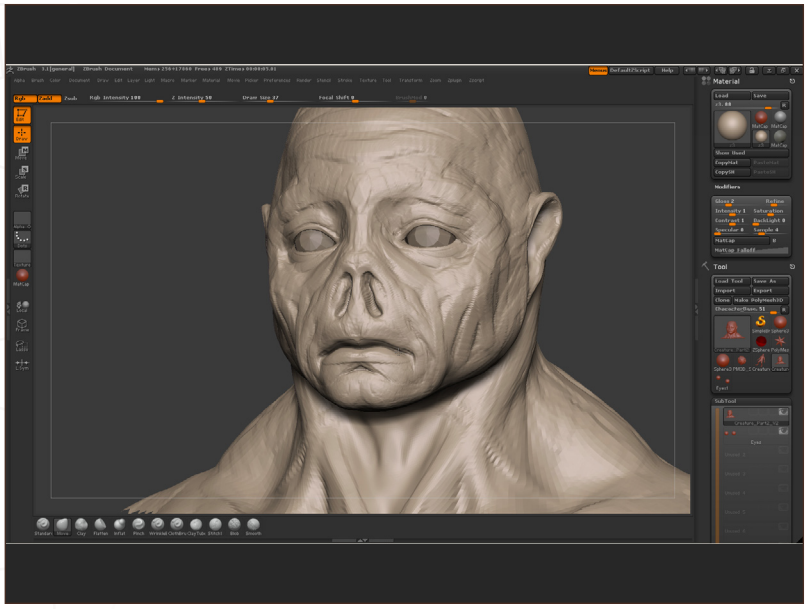
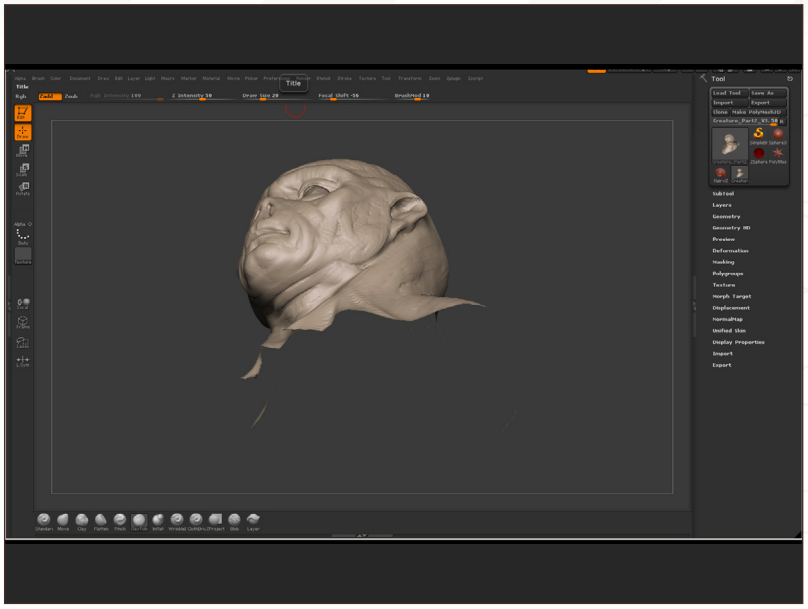


Fig 19

19. Define the lips a little more and refine the muscles in the chin and below the sides of the lower lip. Using the Move tool, move the mouth around into a neutral position, not smiling or frowning too much. If the model will be animated using morph targets, the whole face should be sculpted in a neutral, expressionless middle ground so the expressions can be added later (**Fig.19**).

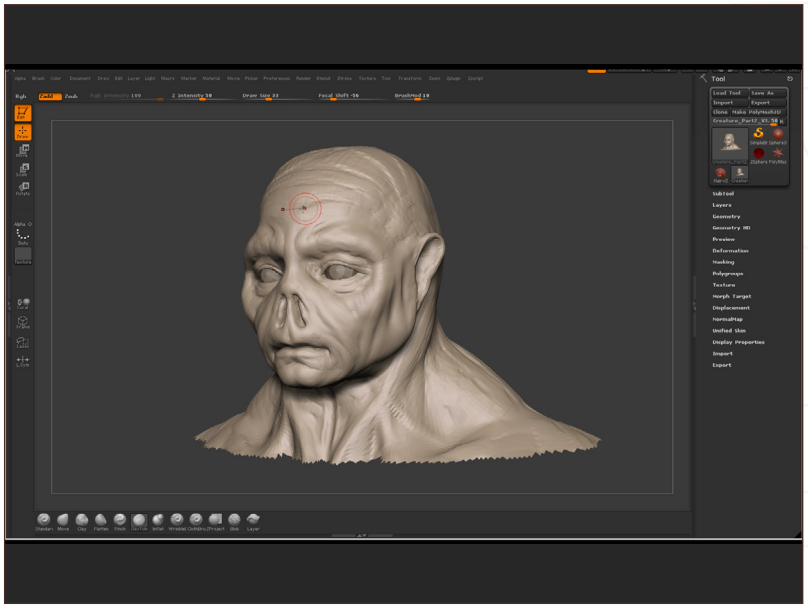
20. Sculpt the area underneath the chin where the skin bunches up a bit and collects. Use your imagination and reference to decide how much the skin would hang off his body with the amount of muscle and fat he has (**Fig.20**).

Fig 20



21. Lightly smooth the head over now so we can judge the forms from close up, and from a distance, to see if they stand out well enough. It's good to do this every now and again. Use the Wrinkle brush we created earlier to add a bit more of a pinch cut into forms, such as the brow and forehead wrinkles (**Fig.21**).

Fig 21



22. Now it's time to work on the eyes. Pull up references of human eyes and the way they wrap around the eyeball, but also look at pictures of monkeys and gorillas; even horses can be good reference here. Rebuild the lower eyelids to have more volume and really hang down off the eyes. Think about how gravity would affect the skin over the years (**Fig.22a – 22b**).

Fig 22a

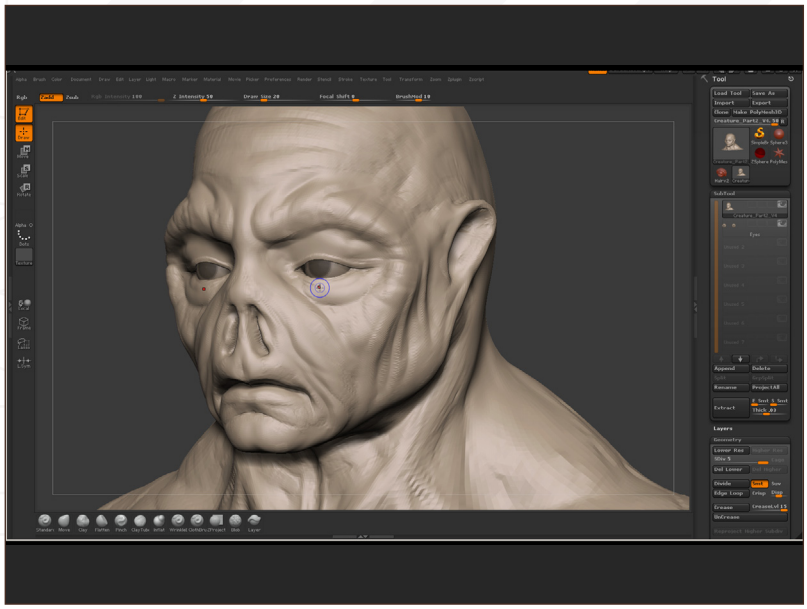


Fig 22b

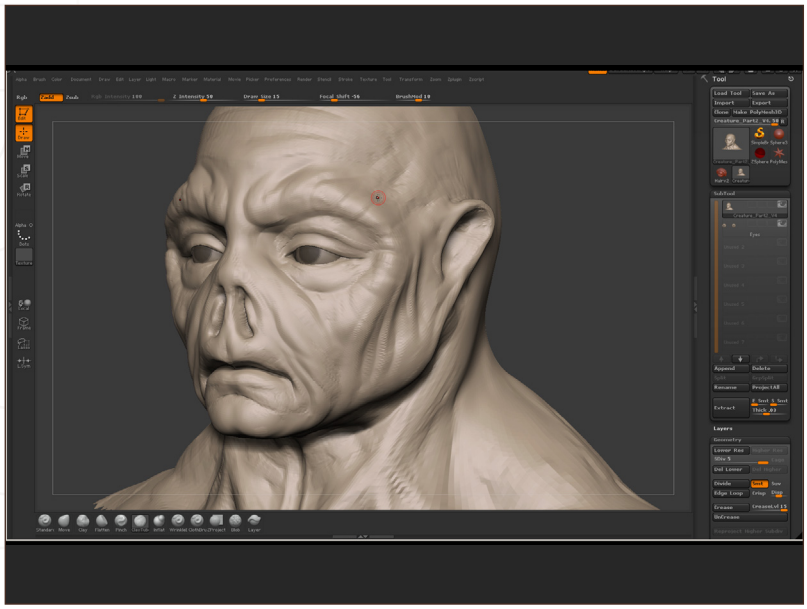


Fig 23

23. Rebuild the upper eyelid now, again thinking about the gravity of the overlapping fleshy parts and how the eye curves (**Fig.23**).

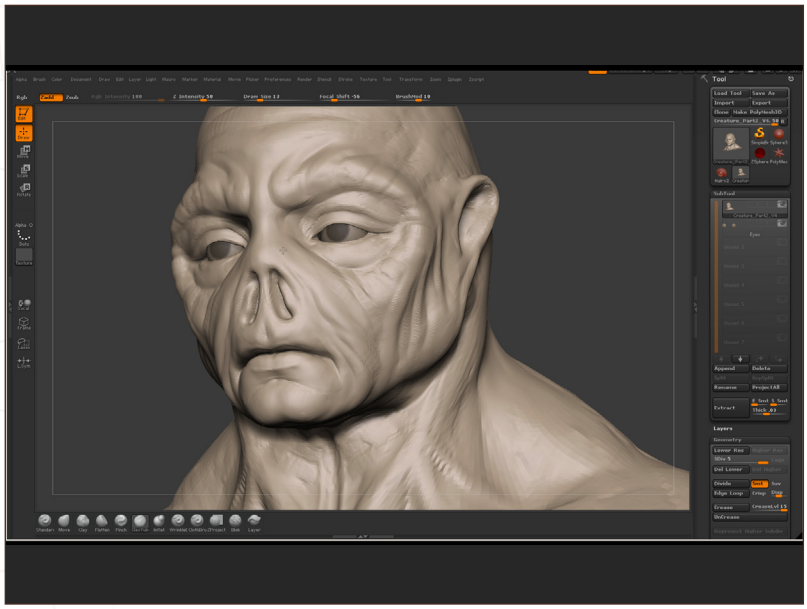


Fig 24

24. Smooth out the forms a little more on the face, around the nostrils and chin. Add further definition to the lower lip and make sure the lower lip tucks in under the top lip in the corners. It's extremely import to get this little tuck-in, as it's a very common beginner mistake to have the corners of the lips pinch, looking like Mr. Potato Head's stuck-on lips. It's very easily avoided now that we can sculpt the high-res model directly, so watch your anatomy and fold the top lip over in the corners (**Fig.24**).

25. To round up this part of the series, sculpt the wrinkles into the area underneath the eyes, to signify his age and hard life, and save your work (**Fig.25**).

We'll continue the high-res sculpting work in ZBrush in the next instalment of this Next Gen Character Creation tutorial series. In the meantime, you can download the free movies accompanying this tutorial to see my ZBrush workflow – hopefully these will help increase your understanding of what you have just followed in this tutorial.

Thanks for reading, see you next time.

Chapter 2 - High-Poly Modelling Part 1

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Fig 25